

Technical COMMUNICATION

Journal of the Society for Technical Communication



Adobe FrameMaker (2019 release)

Intelligent content for any screen, format and language. Superfast.

Fast. Powerful. Future-ready. Boost performance with an all-new 64-bit architecture, up to 65% faster publishing, powerful XML/DITA workspace and more.

Request demo



Get in touch



techcomm@adobe.com



+1-866-647-1213



Society for
Technical
Communication

President

Jane Wilson

Vice President

Ben Woelk

Secretary

Kirsty Taylor

Treasurer

James Bousquet

Immediate Past President

Alyssa Fox

Directors

Alisa Bonsignore

Todd DeLuca

Jessie Mallory

Robert Perry

What is a technical communicator? Technical communicators develop and design instructional and informational tools needed to ensure safe, appropriate, and effective use of science and technology, intellectual property, and manufactured products and services. Technical communicators combine multimedia knowledge and strong communication skills with technical expertise to provide education across the entire spectrum of users' abilities, technical experience, and visual and auditory capabilities. For more information visit www.stc.org/about-stc/defining-technical-communication.

The Society for Technical Communication is the largest association of technical communicators in the world. STC is currently classifying the Body of Knowledge for the field and communicating the value of technical communication. Its volunteer leadership continues to work with government bodies and standards organizations to increase awareness and accurate perception of technical communication. Membership is open to all with an interest in technical communication. Visit the STC Web site (www.stc.org) for details on membership categories, fees, and benefits.

INDEX TO ADVERTISERS

ADVERTISER	TELEPHONE/FAX	EMAIL/URL	PAGE
Adobe Systems	+91 120 2444711/ +91 120 2537681	TechCommCoreMarketing@adobe.com www.adobe.com/products/technicalcommunicationsuite.html	C2
STC Education	+1 (703) 522-4114	www.stc.org/education	C3
STC Certification	+1 (703) 522-4114	www.stc.org/certification	ii
STC Summit	+1 (703) 522-4114	www.summit.stc.org	C4

Technical COMMUNICATION

Journal of the Society for Technical Communication

EDITOR-IN-CHIEF

SAM DRAGGA
Texas Tech University
tceditor@stc.org

ASSOCIATE EDITOR, BOOK REVIEWS

JACKIE DAMRAU
CBRE, Society for Technical Communication Fellow
jdamrau3@gmail.com

ASSOCIATE EDITOR, RECENT & RELEVANT

LYN GATTIS
Missouri State University
LynGattis@missouristate.edu

EDITORIAL ASSISTANTS

HEIDI L. EVERETT
Texas Tech University
heidi.everett@ttu.edu

SARAH K. ROBBLEE
Texas Tech University
sarah.robblee@ttu.edu

REPRINT PERMISSIONS

TCcopyright@stc.org

EDITORIAL ADVISORY BOARD

RAMESH AIYYANGAR
Persistent Systems
aiyyangar@gmail.com

THOMAS BARKER
University of Alberta
tbarbarker@ualberta.ca

MICHELLE CORBIN
IBM Corporation
corbinm@us.ibm.com

RAY GALLON
Culturecom
infodesign@culturecom.net

CAROLINE JARRETT
Effortmark Ltd
caroline.jarrett@effortmark.co.uk

AVON J. MURPHY
Murphy Editing and Writing Services
avonmu@comcast.net

JANICE (GINNY) REDISH
Redish & Associates, Inc.
ginny@redish.net

KAREN A. SCHRIVER

KSA Communication Design & Research
kschriv@earthlink.net

KIRK STAMANT

Louisiana Tech University
stamantk@latech.edu

DESIGN AND LAYOUT

CONTENT WORK
1050 30th Street, NW
Washington, DC 20007
+1 (202) 465-8150

ADVERTISING REPRESENTATIVE

STACEY O'DONNELL
Chief Operating Officer
Society for Technical Communication
9401 Lee Highway, Suite 300
Fairfax, VA 22031-1803, USA
Direct: +1 (571) 366-1915
Fax: +1 (703) 522-2075
stacey.odonnell@stc.org

SUBSCRIPTIONS

+1 (703) 522-4114

Technical Communication (ISSN 0049-3155, permit 0763-740) is published quarterly by the Society for Technical Communication, a nonprofit educational organization, 9401 Lee Highway, Suite 300, Fairfax, VA 22031-1803, USA. All rights reserved. Copyright © 2019 by Society for Technical Communication. Periodicals postage paid at Fairfax, VA 22030, USA, and at additional mailing offices. Canada Post Agreement Number 40045946. Send change of address information and blocks of undeliverable copies to P.O. 1051, Fort Erie, ON L2A 6C7, Canada.

POSTMASTER: Send address changes to *Technical Communication*, 9401 Lee Highway, Suite 300, Fairfax, VA 22031-1803, USA. Printed in the USA.

CHANGES OF ADDRESS AND CORRESPONDENCE: Notification of change of address for both STC members and nonmember subscribers should be sent to the STC office. Nonmember subscription rates (print version): \$400 USD per year, \$420 USD in Canada, (\$440 USD overseas). Individual issues may be purchased from the Society office for \$40 while supplies last.



PRACTITIONER CERTIFICATION OPENS IN 2019

Certified Professional Technical Communicator™ (CPTC)

Be a leader. Have your Foundation Certification? Take your career to the next level by obtaining your Practitioner Certification.

For more information about certification and to start the process, visit www.stc.org or email stc@stc.org.

Learn more at www.stc.org/certification

Technical COMMUNICATION

VOLUME 66, NUMBER 1

February 2019

ISSN 0049-3155

FEBRUARY 2019

Journal of the Society for Technical Communication

ARTICLES

APPLIED RESEARCH

- 7** Beyond Accuracy: What Documentation Quality Means to Readers

By Yoel Strimling

APPLIED RESEARCH

- 30** Lost in Content Management: Constructing Quality as a Global Technical Communication Metric

By Tatiana Batova

APPLIED RESEARCH

- 53** Workplace Democracy and the Problem of Equality

By Jared S. Colton, Avery C. Edenfield, and Steve Holmes

APPLIED RESEARCH

- 68** Genre Chameleon: Email, Professional Writing Curriculum, and Workplace Writing Expectations

By Patricia Welsh Droz and Lorie Stagg Jacobs

APPLIED THEORY

- 93** Hypertext Theory: Theoretical Foundations for Technical Communication in the 21st Century

By Craig Baehr and Susan Lang



DEPARTMENTS

- 1** EDITORIAL
Problems and Solutions in Conducting Research
By Sam Dragga
- 6** ARTIST'S NOTES
On the Cover
- 105** BOOK REVIEWS
Jackie Damrau, Editor

ONLINE ONLY TECHCOMM.STC.ORG

- E1** RECENT & RELEVANT
Lyn Gattis, Editor

INSTRUCTIONS FOR AUTHORS

About the Journal

Technical Communication is a peer-reviewed, quarterly journal published by the Society for Technical Communication (STC). It is aimed at an audience of technical communication practitioners and academics. The journal's goal is to contribute to the body of knowledge of the field of technical communication from a multidisciplinary perspective, with special emphasis on the combination of academic rigor and practical relevance.

Technical Communication publishes articles in five categories:

- Applied research – reports of practically relevant (empirical or analytical) research
 - Applied theory – original contributions to technical communication theory
 - Case history – reports on solutions to technical communication problems
 - Tutorial – instructions on processes or procedures that respond to new developments, insights, laws, standards, requirements, or technologies
 - Bibliography – reviews of relevant research or bibliographic essays
- The purpose of Technical

Communication is to inform, not impress. Write in a clear, informal style, avoiding jargon and acronyms. Use the first person and active voice. Avoid language that might be considered sexist, and write with the journal's international audience in mind.

Our authority on spelling and usage is *The American Heritage Dictionary*, 4th edition; on punctuation, format, and citation style, the *Publication Manual of the American Psychological Association*, 6th edition.

Manuscript Preparation and Submission

Submitting a manuscript to Technical Communication for review and possible publication implies that its submission has been approved by all authors, researchers, and/or organizations involved, that the manuscript (or a substantial portion) has not been published before, and that the manuscript is not under review elsewhere.

When using previously published materials (for example, images or text excerpts), authors are responsible for obtaining the permissions needed to reprint copyrighted materials.

The typical article length is between 5,000 and 8,000 words. Exceptions are possible.

Use up to three levels of headings, and indicate them clearly. Do not number headings of sections and subsections.

FIRST-LEVEL HEADING

(all caps, on a line by itself)

Second-level Heading

(each word capitalized, bold, on a line by itself)

Third-level heading

(first word only capitalized, bold, on a line by itself)

Except for the cover page, remove all identifying information from the manuscript. This includes author names, author affiliations, acknowledgments, and references to work in progress or unpublished manuscripts.

Do not use footnotes. Instead, use author-date citations within the text, and provide a complete list of works cited (labeled "References"). Avoid multiple citations for ideas or approaches unless they demonstrate an evolution in thought or practice.

Check all author-date citations within the text and all entries in the reference list for both accuracy and conformance to the *Publication Manual of the American Psychological Association* (APA), pp. 169–224.

Submit your manuscript as a double-spaced electronic file with one-inch margins. Do not attempt to mimic the format or layout of a published article. Keep the layout as clean and simple as possible.

Microsoft Word files are preferred. If you use another word processor, a Rich Text Format (RTF) file is also acceptable. Organize your manuscript as follows:

- Page 1: Cover page – Title of the manuscript, a running head, and the names, affiliations, and contact info of all authors
- Page 2: Structured abstract – A summary of the article (maximum 250 words), using the headings "Purpose," "Method," "Results," and "Conclusion"
- Page 3: Up to five keywords and a practitioner's takeaway (maximum 100 words) displayed as a bulleted list summarizing the practical implications of the article
- Page 4: Start of the manuscript
- References
- Tables and figures – Start each table or figure on a new page. Assign each table and figure a number and title. If a manuscript is accepted for publication, provide high-resolution images.

Send the manuscript as an attachment to an e-mail message to the editor-in-chief, Sam Dragga (e-mail: tceditor@stc.org).

Review Process

The editor-in-chief will read your manuscript and check its potential suitability for the journal. In the case of a positive outcome, the manuscript will be sent to three independent referees for a double-masked review. On the basis of the referees' recommendations, the editor will send you a decision about the manuscript: accept, accept with revisions, revise and resubmit, or reject. The review criteria are listed at www.stc.org/techcomm/instructions-for-authors/.

Copyrights

The Society for Technical Communication requires that authors transfer copyrights to STC for articles appearing in Technical Communication and grant STC permission to post the articles on Technical Communication Online for an indefinite period. STC will grant colleges, universities, and libraries the right to use the articles free of charge for educational purposes.

Sam Dragga, Editor



Problems and Solutions in Conducting Research

Research in technical communication typically focuses on problems and solutions: That is, the researcher notices a problem in the field (e.g., ineffective or inefficient instructions) and looks for a solution (e.g., examining variations in the design of pages or screens). In reporting on a study, the researcher emphasizes the problem identified and the solution considered, including the history of the problem and related investigations of it as well as how the solution was examined and what was discovered about it. Problems and solutions, however, also characterize the conduct of the research itself, but their influence on the researchers and the research project is usually minimized or ignored altogether.

This issue of STC's research journal offers five disparate research projects, but I also invited the authors to address two questions about their studies:

1. What problems did you encounter in the research and writing of your article? (Problems might be related to funding, access to sources, ethical issues, logistics of implementing your methods, deciphering theoretical or practical implications, life crises, etc.)
2. What did you do to solve, mitigate, or circumvent these problems?

In "Beyond Accuracy: What Documentation Quality Means to Readers," Yoel Strimling addresses

the problem of creating usable and useful documentation, and looks for a solution in a reader-centered definition of information quality. He reports on a survey he distributed worldwide to readers of documentation that invited respondents to rate 15 dimensions of information quality. The results from 80 completed questionnaires offer empirical support for the claim that users desire documentation that is, above all, accurate, relevant, easy to understand, and accessible. This definition of information quality, according to Yoel, gives writers of documentation the insight necessary to solicit genuinely informative and practical comments from the readers of documentation.

Yoel's challenges in putting together this research project were several. As he explains,

The first issue I had to deal with was one of logistics. I'm a full-time-employed technical editor, with deadlines to meet and projects to complete. Research into how to get meaningful and actionable feedback about what my readers want from the documentation I send them is a critical component of my role as a reader advocate, but it is not high in my official job description, and I cannot always invest the time needed to properly focus on it. This means that sometimes months can go by without my working on my research. It can take a long time for me to collect data, analyze

it, and write about it, but the research is always in the back of my mind, and I'm always trying to think of ways to implement and apply what I'm finding to my "real job"—which is to write things that readers will use.

The second issue is one that will probably be familiar to many graduate students working on their theses and dissertations: There's always another journal article or book to read. One article leads to another and to another and to another. It's easy to fall down this never-ending rabbit hole of previous literature. But if you keep reading articles, you will never get yours written. At some point, you must draw a red line and tell yourself "OK, I've read enough of other people's research; now it's time for them to read mine!"

Lastly, but most importantly, is the issue of getting access to the correct audience to be studied. It's not always easy (and sometimes it's impossible) for technical communicators to have direct contact with their end-user readers. Sometimes, it's a lack of time, resources, or interest, and, sometimes,

it's because of a stated policy of not asking customers about documentation quality. This was one of the biggest obstacles I had to overcome in my research. I had to find enough technical communicators (or more often, customer support groups) who were willing and able to send my questionnaire to their readers. For a robust and applicable result, it was very important to get as large a sample size of respondents as possible and from a wide enough range of industries. With a tenacious effort, a clearly explained rationale and goal, and a number of helpful technical communicators and customer support groups, I was able to get in contact with enough end-user readers to create a definition of documentation quality from the readers' point of view. However, this model is still preliminary, and I am continuing my efforts to improve its robustness and applicability—and the challenge of getting to the correct audience is still problematic.

In "Lost in Content Management: Constructing Quality as a Global Technical Communication Metric," Tatiana Batova investigates the problem of creating high-quality multilingual texts in CCM (Component Content Management) environments. Tatiana searches for the solution to this problem in the results of two surveys—one for technical communicators and one for technical translators. In analyzing the results of the surveys,

Tatiana focused on 98 technical communicators experienced with translation/localization and 58 technical translators experienced with microtranslation (i.e., translation of components of content). In their answers to the surveys, the two fields voice differences (e.g., technical communicators believe CCM has a positive impact on multilingual quality, while technical translators think the impact is negative) but also share similarities (e.g., espousing cultural adaptation of information products), which makes the collaboration of the two fields as potentially productive as it is imperative to achieving appropriate metrics (focused on users, business goals, and available resources) for multilingual quality in a CCM world.

In managing this research project, Tatiana discovered how the solution to one problem created a new and bigger problem to solve:

When I started this project, my goal was to design the survey in a way that combines academic and industry perspectives and to keep the survey relatively consistent for technical communication and translation/localization participants. To achieve this goal, I worked with the Center for Information Development-Management's Research Advisory Board, which consisted of both industry managers and scholars. My initial research was sponsored by this organization's grant. I also enrolled the help of several translation and localization scholars and project managers

I knew from my own localization days. While this approach definitely helped me to get a comprehensive range of questions in my survey, it also created new challenges. I received ample, insightful feedback but often different (and sometimes mutually exclusive) angles were emphasized, creating what I called "a good problem to have." I was acutely aware of the need to reconcile the perspectives or I ran the risk of never finishing the survey design and of making the survey too long (in return causing participant fatigue and a low completion rate for started surveys). So I had to find a delicate balance between the breadth and depth of the survey, often thinking of the angles as patterns repeated in the majority of comments and recognizing the mutual exclusivity as a pattern of contradiction.

Tatiana also discovered that research efforts are always subject to the higher priorities of family responsibilities. She explains,

My project was interrupted by a major life crisis—becoming a sole caretaker for my husband, who had to undergo multiple brain surgeries over a period of several months. While such a time of turmoil was definitely not suited for conducting a research project, the first survey was already completed and I was able to get the second survey designed and online. Focusing on my family, I kept this second survey open for longer than I

Sam Dragga, Editor

originally planned—which, in the end, had the added benefit of getting more responses. And once the storm clouds cleared, I was happy to get back to the more “normal” activities of analyzing survey results—bit by bit. In the end, the survey method of data collection gave me the flexibility necessary to complete the project.

In “Workplace Democracy and The Problem of Equality,” Jared S. Colton, Avery C. Edenfield, and Steve Holmes examine the problem of writing regulations for on-the-job behavior in horizontal or non-hierarchical organizations and propose a potential solution: that is, cultivate the practice of equality as a disposition or ongoing habit across the organization in addition to institutionalizing it as a resource of written policy. The investigation of this problem and solution includes a review of research on democratically organized businesses, a consideration of the feasibility of exercising *métis* (or cunning intelligence) to navigate and mediate inequalities, and a discussion of the challenges to equality experienced in two cooperatives in spite of their admirable intentions and detailed policies.

In this research project, the three co-authors experienced different problems but discovered shared solutions through their collaboration. For example, Jared perceived a problem in the abstract nature of ethical discussions:

The practice of technical communication is always informed by ethical and other

theoretical frameworks even if we don’t articulate those frameworks to ourselves or others on a regular basis. The problem is that discussions of ethics can often feel too abstract to be relevant, or they can be challenging to apply to certain tech comm scenarios.

The way we addressed this problem was by really listening to our reviewers’ feedback. Sometimes a researcher/writer can hear criticism and be upset and even disagree with that criticism, but just as we would hope for reviewers who are generous readers, we tried really hard to be generous readers of our reviewers’ responses and to take each response as advice intended to strengthen our argument. I think this approach resulted in a much stronger article that could appeal to a broad audience of TC practitioners as well as teachers and researchers.

Avery perceived the major problem of the research project was the relative unfamiliarity of the topic, and the key solution was in finding how to explain its importance to technical communicators.

For me the biggest challenge was writing about a topic that hasn’t been investigated much (cooperatives and democratic organizations). And a lot of the research was from other fields or really old. We were drawing on some research that was published in 1979 and

the books were out of print: in part, this article is a recovery or revisiting of a topic that hasn’t been talked about in a while.

In writing this article, it was really important to be clear that such organizations are relevant to us now and are ubiquitous. We wanted to convey the importance of paying attention to non-hierarchical organizations and to show readers that these organizations can offer a real opportunity to enact justice and equality. Horizontal or other “unconventional” work arrangements are growing, and we (as researchers, practitioners, and educators) need to know how to work with and in these arrangements.

Steve shared Jared’s and Avery’s recognition that the abstract nature of the research project was a problem to be solved with a clear emphasis on practical applications:

On the theoretical front, we encountered logistical problems in the sense that TC as a field can be a challenging audience for more theoretical conversations. The interest is certainly there with the field’s turn toward social justice and intercultural communication as a case in point. However, we have encountered plenty of reviewers in the past who, regarding the use of theoretical figures like Ranciere, respond with something akin to “How is this relevant to practitioners?” It was really an advantage to

have several collaborators for a project of this nature. It was easier for the three of us collectively to imagine reader responses and to adjust the theoretical material accordingly.

A different problem and solution for the project emerged from Steve's family responsibilities:

On a personal front, I was undergoing a series of life crises during the entire life cycle of the article. I was a caregiver for an individual with extreme behavioral health issues who required around-the-clock monitoring at several points. I really leaned on my collaborators here. They were kind enough to take on some of the heavier writing tasks during some moments in which I was less than available while leaving me with lighter loads. I can't say enough about the value of finding generous research collaborators to work with across multiple projects. We're all likely to encounter moments in our professional lives where our personal lives impact our professional lives, and so having empathetic collaborators is truly a wonderful situation to have.

"Genre Chameleon: Email, Professional Writing Curriculum, and Workplace Writing Expectations" by Patricia Welsh Droz and Lorie Stagg Jacobs considers the problem of designing college-level writing courses that adequately prepare students for writing on the job. Patricia and Lorie derived insights

for a solution to this problem by questioning 32 industry-insiders (6 by interview and 26 by survey) about the kinds of writing required on the job and the impact of communication skills on hiring, retention, and promotion. The respondents included chief executive officers, business partners/owners, supervisors, directors, human resource managers, recruiters, and independent consultants, and their opinion was unanimous regarding e-mail as almost always a daily writing obligation. The findings of this research project indicate that effective preparation of writing students must emphasize intensive study of email messages—a genre as altogether variable (in purpose, style, and format) as it is ubiquitous on the job.

Patricia and Lorie tackled interpersonal and administrative problems in this research effort and derived gratifying solutions from their collegiality:

We began as a three-person research team and struggled with the division of labor and the scope and size of the project. Our third researcher wanted the project to be for local marketing data only, but we wanted to turn our pilot study for marketing data (basic interviews with half a dozen local professionals) into a more substantial second-stage quantitative study, which is what we have presented in "Genre Chameleon." Our differing visions for the research did lead to minor interpersonal conflict with our beloved colleague, an

increased time-investment for us in the project, and a reconceptualization of the research design. And the new research design required the participation of additional stakeholders because we had a complete lack of funding.

Originally, we only wanted to get local professionals to affirm the value of writing at work so we could convince our disbelieving STEM students that writing is a lifelong work skill; the project got bigger once we had the responses from our initial interview participants. Realizing we had some interesting findings, we expanded the project and asked our college's Career Services Department to help us disseminate the survey via their contact list of potential employers for graduates. This was difficult because we had to relinquish control of the survey dissemination and hope that it was as much of a priority for Career Services as it was for us. Thankfully, this partnership did pay off in the end and is one we have been able to revisit for other projects. And our third colleague remains instrumental for the marketing of our professional writing minor, was an early reader of the "Genre Chameleon" manuscript, and continues to be a champion of all the Droz and Jacobs research projects.

In "Hypertext Theory: Theoretical Foundations for Technical Communication in the

21st Century,” Craig Baehr and Susan Lang examine the problem of hypertext’s relationship to the field of technical communication and find their solution through a review of research. Starting with Vannevar Bush’s “associative trails” in 1945, Douglas Engelbart’s “card system” in 1962, and Ted Nelson’s coinage of “hypertext” and “hypermedia” in 1965, Craig and Susan trace the growing influence of evolving hypertext theory on the core competencies and the products and practices of technical communication. Their finding is that virtually everything we think and do as technical communicators, from collaborative authoring and information design to content management and social media, is a consequence of hypertext theory. And this key insight about the foundations of the field offers a uniform identity for this highly variable profession.

All the problems that Craig and Susan might have anticipated in compiling their research were quickly addressed with ready solutions from years of experience in the field as well as working with each other on previous projects:

We both taught in Texas Tech University’s online program for years and have collaborated on several publishing and teaching projects since 2003 while rarely in the same city for more than a week or two at a time: Working from a distance is thus our normal mode of operation. We frequently call and email work back and forth as we draft and revise. We had also been talking about this project for a year or

so before we started writing in May 2017. We worked for several days on it while together in Lubbock, and that gave us enough core material that it was easy to divide up the work and move forward efficiently. We drafted the initial manuscript in a little less than five months.

And we didn’t have trouble with the choices of items for the literature review. We have been part of this field for nearly 25 years now, and both of us were already familiar with a range of scholarship in the field. Some of our knowledge naturally overlaps, but we also could leverage our different backgrounds to ensure coverage.

Given the extended history of hypertext, we sought to present that history in a condensed but coherent way; however, an additional task was to integrate the discussion of theory in terms accessible to both practitioners and academics who may not be as familiar with the subject. To accomplish these things, we integrated examples and extended definitions of key hypertext theory terms and articulated connections with central concepts in technical communication. Additionally, the feedback from reviewers helped in refining our selections from the historical material on hypertext.

From the comments of the authors of these five articles, I derive the following hypotheses about managing research projects

in technical communication (i.e., five is likely insufficient for reliable conclusions):

1. Research projects require solving multiple problems, simultaneously and consecutively.
2. Major problems include
 - Reserving time for research
 - Determining the scope of the literature review
 - Discovering and accessing the right information sources
 - Explaining the practical applications of theoretical studies
 - Explaining the theoretical implications of industry practices
 - Taking care of life crises
3. The solution to a problem could lead to a subsequent problem (and, ideally, a subsequent solution).
4. Experience in the field makes it easier to anticipate problems and prepare solutions.
5. Collegiality is necessary.
6. Finding appropriate and considerate partners and collaborators is important.
7. We are human beings who do research instead of researchers who are human beings.

Obviously, each of my hypotheses could itself be the subject of a research project.

I believe you will appreciate the five articles in this issue for their insight on this always curious field. And I hope you will admire as thoroughly as I do the unyielding intellectual and emotional effort involved in their creation.

On the Cover



As an interactive design specialist, I know that working on a team of people is inevitable. When working on teams of people, especially people who hold different roles within a project, I find communication is key. Part of my role will be to communicate between departments, as well as advocating for the user of the product being designed and developed. In illustrating the topic of “finding your footing in the world of developer docs,” I thought immediately of solid communication. If a developer does not have the right documentation, or the documentation isn’t thorough enough, this can cause problems when developing whatever the project is—app, interface, webpage, product, etc. Naturally, if a developer does not have the correct documentation, we have an angry developer and a project that is delayed. On the flip side, it is just as important for a developer to communicate with the team for the same reasons. It is each team member’s job to communicate if there is an issue or a misunderstanding with any documentation. I simply illustrated this process by showing a foot lightly stepping near a pile of “developer documents.” We all need to watch our footing and work as a team when dealing with team projects.

About the Artist

Lindsay Blankenbeker is an undergraduate student in her senior year at Kennesaw State University. She is studying Interactive Design with a concentration in Technical Communication. This Bachelor of Science degree focuses on the technical, theoretical, and creative skills needed in the digital-based world of user interface and user experience development and design. Lindsay’s passion is to create designs that are centered around human emotion and interaction. She is available at lblank6@students.kennesaw.edu.

Beyond Accuracy: What Documentation Quality Means to Readers

By Yoel Strimling

Abstract

Purpose: The purpose of this paper is to propose a preliminary, focused, clearly defined, and reader-oriented model for collecting meaningful and actionable feedback to improve documentation quality and increase reader satisfaction. This model is based on a narrow yet comprehensive set of 15 distinct information quality dimensions (based on previous research by Wang and Strong, 1996) that cover all categories of information quality – Intrinsic, Contextual, Representational, and Accessibility (ICRA). Research was done to determine which information quality dimensions readers rated as most important per category (as they related to documentation), which were then used to create a clear, comprehensive, and empirically based definition of documentation quality from the readers' point of view. This definition of documentation quality is the heart of the model and provides a strong basis for measuring what readers want from the documentation we send them.

Methods: Questionnaires were sent to readers, asking them to rate Wang & Strong's information quality dimensions in terms of importance as they applied to documentation. Dimensions were sorted by information quality category, and the most important dimension per category (as determined by weighted average) was calculated.

Results: According to readers, the following four information quality dimensions are the most important per ICRA category for documentation: Accurate, Relevant, Easy to Understand, and Accessible (AREA).

Conclusions: We can use the AREA information quality dimensions to create a preliminary, focused, clearly defined, and reader-oriented model for collecting meaningful and actionable feedback that will improve documentation quality and increase reader satisfaction.

Keywords: documentation quality, information quality, quality definitions, documentation quality feedback, documentation quality assessment

Practitioner's Takeaway:

- Feedback from readers about documentation quality must be meaningful and actionable to be worthwhile.
- This article proposes a preliminary, focused, clearly defined, and reader-oriented model for collecting meaningful and actionable feedback, based on empirically tested information quality categories and dimensions.
- Aside from collecting feedback, this model can be used as a starting point for technical communicators and their managers who need to have reliable methods and metrics for measuring documentation quality.
- This model can also be used to help technical communication instructors provide evidence-based materials for teaching students how to write quality documentation.

Beyond Accuracy

Socrates. *Anyone may see that there is no disgrace in the mere fact of writing.*

Phaedrus. *Certainly not.*

Soc. *The disgrace begins when a man writes not well, but badly.*

Phaedr. *Clearly.*

Soc. *And what is [written] well and what is [written] badly – need we ask Lysias, or any other poet or orator, whoever wrote or will write either a political or any other work, in meter or out of meter, poet or prose writer, to teach us this?*

- **Phaedrus** (Plato)

Introduction

As technical communicators, we put a lot of time and effort into creating the best possible documentation we can. We write because we want to help our readers to do the tasks they need to do or to understand the concepts they need to know.

Because we are professionals, we take pride in our work and want it to be the best it can be. But how do we know if what we are writing is what our readers want? How do we know that the information we are sharing with our audience is helping them do or know what they need to do or know? We might be writing documentation with one standard in mind, and be satisfied with it, yet our readers might look at the same documentation and be very unsatisfied.

A disconnect between what we are producing and what our readers actually want makes it very difficult to justify writing documentation at all—why should we write things nobody wants? As Filippo (2007) says, “Without an intimate understanding of our users and their needs, how can we design information intended to assist them, or help them do their jobs more efficiently? (p. 9)”

The best way to align ourselves with our audience’s needs is to get direct feedback from them (Wiley, 2006). But we also need to ensure that the feedback we get is clear and focused, rather than vague and hard to implement. To collect feedback but be unable to act

upon it because it is not clear to us what the problem is and what we need to do about it is worse than not collecting any feedback at all.

Getting Feedback from Our Readers

There are many ways to get feedback about our documentation from our readers—for example, Wilson (1999) lists 29 different techniques for testing the usability of documentation, and Barnum (2002) describes numerous methods for collecting feedback about documentation quality from both experts and users. What is common to all of them, however, is that they rely on getting meaningful and actionable feedback to improve documentation quality:

- Meaningful feedback requires readers to focus only on the important issues.
- Actionable feedback requires us to be able to take what our readers tell us and do something about it.

Getting Meaningful Feedback

To get meaningful feedback, we need to make sure that what we ask our readers is presented in a way that maximizes its effectiveness. As Hart (1997) writes, “How you ask a question strongly determines the type of answer that you will obtain. (p. 52)” He goes on to say that questions must be precise, have answers that efficiently direct towards improvements, be framed to prevent simplistic answers, and focus on the problems (what he calls “negative feedback”) that interfere with customer satisfaction. Similarly, Barnum (2002) writes that questions we ask readers about documentation need to be unambiguous, unbiased, and presented so they prompt respondents to answer in a consistent way. Dillman, Smyth, and Christian (2014), in their definitive and comprehensive book on how to design surveys, provide numerous guidelines about how to build questions that adequately measure the concepts of interest to the questioner (e.g., use as few words as possible to pose the question, find specific and concrete words to specify the concepts clearly, and choose the appropriate question format). The fundamental theory behind these guidelines is that the questions must be presented in a way that every potential respondent will be willing to answer, will be able to respond to accurately, and will interpret in the way the questioner intended.

Table 1 lists other characteristics of good feedback questions; although the focus of some of these is

on how survey questions should be written, these characteristics apply to all methods of collecting feedback from readers (for example, user focus groups, usability testing, and other face-to-face interactions).

Based on these characteristics, we can say that to get meaningful feedback from our readers, we need to ensure that we meet the following criteria:

- We must focus only on the most important issues from the readers' point of view.
- We must ask only the fewest possible number of questions that can cover all of these important issues.

- We must use terminology that can be clearly and universally understood by all respondents.

Getting Actionable Feedback

But it is not enough for us to collect meaningful feedback about our documentation from our readers. We also need to be able to use the information we collect to take actions that will help us directly address and prioritize the issues that are important to them (Parameswaran, 2005; LaMalfa & Caruso, 2009).

Table 1. Characteristics of good feedback questions

Source	Characteristic
Barnum (2002)	Long enough to be useful, and short enough to encourage participation
Bevis & Henke (2008)	Short and focused
Dillman, Smyth, & Christian (2014)	Questions need to enable the respondent to: <ul style="list-style-type: none"> • See or hear the question being asked • Understand what is being asked • Gather the relevant information • Formulate an answer • Respond to the question
Harker & LaMalfa (2009)	<ul style="list-style-type: none"> • Short and to the point, so it will be more likely to be answered • Tailored to your target audience (that is, it must be user-focused)
InfoPoll (1998)	<ul style="list-style-type: none"> • Short and straightforward • Easy to answer • Not leading • Mainly closed, with a limited number of open ones • Written using concepts and terminology that are easily and consistently understood by the target audience
Lacki (2010)	Focus only on the issues that are the most important to the target audience (to separate the signal from the noise)
LaMalfa & Caruso (2009)	Based on concepts that are clear and universally understood by the target audience
Redish (2008)	Short and asked in a neutral manner
StatPac (2014)	<p>Questions need to:</p> <ul style="list-style-type: none"> • Evoke the truth and be non-threatening • Ask for an answer on only one dimension and focus only on one issue at a time • Accommodate all possible answers • Have mutually exclusive options and that are unambiguous • Produce a variability of responses (that is, the answers are not obvious to all) • Flow well from the previous question <p>Questions should not:</p> <ul style="list-style-type: none"> • Assume preexisting understanding or knowledge • Use vague, hard-to-understand, or unfamiliar terminology • Be dependent on responses to previous questions (that is, no branching) • Rank a series of more than five items by importance

Beyond Accuracy

For feedback to be actionable, it must meet the following criteria:

- The readers' responses must be unambiguous.
- The issues that the respondents are concerned about must be easily understood and easily addressable by the people the feedback is intended for.

In other words, if an answer is vague, it becomes almost impossible to know how to solve the problem and whether it was solved successfully. But if we know exactly what the issue is, then we know how to fix it and who in the organization is responsible for fixing it (Hacker & LaMalfa, 2009; Lacki, 2010).

Defining Documentation Quality

Collecting feedback from an audience requires asking questions that can supply meaningful and actionable answers. But when we attempt to collect this type of feedback from our readers about the quality of the documentation we give them, we need to add another criterion to those listed in the previous section—we need to know what readers mean when they talk about documentation quality.

Numerous attempts have been made to define quality, and it is beyond the scope of this paper to go into detail for each one (Table 2 summarizes the most widespread and accepted definitions). Reeves and Bednar (1994) conclude that there is no such thing as a universal definition of quality—different definitions are appropriate under different circumstances and for different users. However, all quality definitions point to

the same thing—it is the user who is the final arbiter of what quality is and what it is not.

This is especially true for documentation, which is always written for a potential audience and must always keep their needs in mind (see, for example, Barnum & Carliner, 1993; Bursaw, Alred, & Oliu, 1993; Redish, 1993; Robinson & Etter, 2000; Carey, et al., 2014). Some readers might be looking for conceptual information, some might need procedural information, and some might want in-depth reference information—for documentation, it is always the reader who is the final arbiter of what quality is and what it is not (Mead, 1998).

Current Definitions of Documentation Quality

To understand what readers actually want from the documentation we give them, we must first find out how readers define documentation quality so we can align ourselves with their expectations. It is, of course, very important that the concepts that readers use to define documentation quality be understood in the same way by writers and that they can be measured consistently.

The summary review of the literature presented in Table 3 shows that there are many different possible definitions for documentation quality. However, there are a number of problems with these definitions.

First of all, many of the traits are vague and can be defined in multiple ways—what is meant by “familiar to the reader” (Brown, 1995) or “worthwhile” (Bush, 2001)? Does “easy to read” (Quesenberry, 2001) mean the same thing as “highly readable” (Betz, 1996),

Table 2. Quality definitions

Source	Definition
Crosby (1979)	Quality is “conformance to requirements,” that is, meeting the customer’s expectations, both stated and implied.
Deming (1986)	Quality is that which the customer specifies, and depends on the customer’s needs.
Juran (1988)	Quality is “fitness for use,” that is, it meets the customer’s needs and is free from deficiencies.
ISO 9000 (2015)	Quality is the degree to which a set of inherent characteristics of an object fulfils requirements, where: <ul style="list-style-type: none"> • A “characteristic” is a distinguishing feature that can be inherent/assigned/qualitative/quantitative (for example, physical, functional, or behavioral). • An “object” is anything perceivable or conceivable, for example, a product, service, process, person, organization, system, or resource. • A “requirement” is a need or expectation that is stated, generally implied, or obligatory.

Table 3. Documentation quality definitions

Source	Definition
Albers (2005)	<ul style="list-style-type: none"> • Information presented in the same way the user processes it • Readers given exactly what they need, when they need it – no more, no less
Bartlett (2012)	<ul style="list-style-type: none"> • Accurate • Complete • Consistent • Understandable • Findable
Betz (1996)	<ul style="list-style-type: none"> • Easy to access • Clear • Concise • Highly readable
Brown (1995)	<ul style="list-style-type: none"> • Easy to find • Familiar to the reader • Easy to understand • Easy to use, so the required task can be accomplished
Bush (2001)	<ul style="list-style-type: none"> • Worthwhile • Sensibly organized • Readable • Effectively designed
Carliner (1997)	<ul style="list-style-type: none"> • User satisfaction • User performance • Client performance • Client satisfaction
Cover, Cooke, & Hunt (1995)	<ul style="list-style-type: none"> • Complete • Accurate
DQTI (Carey et al., 2014)	<ul style="list-style-type: none"> • Easy to use: <ul style="list-style-type: none"> ◦ Task orientation ◦ Accuracy ◦ Completeness • Easy to understand: <ul style="list-style-type: none"> ◦ Clarity ◦ Concreteness ◦ Style • Easy to find: <ul style="list-style-type: none"> ◦ Organization ◦ Retrieveability ◦ Visual effectiveness

Source	Definition
Gregory (2004)	<ul style="list-style-type: none"> • Clear • Concise (depending on the reader's information needs) • Readable • Easy to use
Hackos (2002)	<ul style="list-style-type: none"> • Easy to find • Accurate • Relevant
Hackos et al., (1995)	<ul style="list-style-type: none"> • Easy to find • Accurate • Comprehensive • Easy to understand • Readable
Haramundanis (2001)	<ul style="list-style-type: none"> • Easy to find, with a sound, navigable structure • Easy to use • Well-formatted
HCi (2002)	<ul style="list-style-type: none"> • Deployment (how the document is made available to readers) • Content (the usefulness and value of what is written) • Readability (how intelligible the content is) • Navigation (the ability to find the information the reader wants) • Layout (the look and feel of the document)
ISO/IEC 26514:2008	<ul style="list-style-type: none"> • Accurate • Supplied in a convenient form • Easy to find • Easy to understand • Easy to apply
Manning (2008)	<ul style="list-style-type: none"> • The right content • In the right format • At the right time • For the right user
O'Keefe (2010)	<ul style="list-style-type: none"> • Quality (that is, correct application of grammar, mechanics, style guide, consistency, and so on) • Usable • Accurate • Complete • Concise

Beyond Accuracy

Source	Definition
Quesenbery (2001)	<ul style="list-style-type: none"> • Easy to locate • Easy to read
Redish (1993)	<ul style="list-style-type: none"> • Easy to find • Easy to understand • Visually effective (that is, the most important information must stand out)
Robinson & Etter (2000)	<ul style="list-style-type: none"> • Clear • Helpful in solving problems or answering questions
Smart, Seawright, & DeTienne (1995)	<ul style="list-style-type: none"> • Transcendent quality • Design-based quality • Product-based quality • Customer/user-based quality • Value-based quality • Strategic quality
Spyridakis (2000)	<ul style="list-style-type: none"> • Relevant • Credible/accurate/trustworthy • Clear/understandable/concise • Interesting to readers • Presented so readers can easily orient themselves • Organized properly
Tarutz (1992)	<ul style="list-style-type: none"> • Accurate • Complete • Helpful (so users can do what they need to do) • Easy to find • Clear
TechScribe (2004)	<ul style="list-style-type: none"> • Appropriate for the user's needs • Easily accessible • Technically accurate • Linguistically accurate • Stylistically consistent
Telcordia Technologies Generic Requirements Document – GR-454-CORE (1997)	<ul style="list-style-type: none"> • Comprehensive • Comprehensible
Weinstein & Sandman (1993)	<ul style="list-style-type: none"> • Helpful • Accurate • Clear

Source	Definition
Wiley (2006)	<ul style="list-style-type: none"> • Meets customer requirements • Easy to find • Ordered correctly • Complete • Relevant • Concise • Reliable • Correct • Consistent • Clearly sourced • Readily available • Correctly formatted • Correctly spelled and punctuated, written grammatically • Delivered on time and within budget

“interesting to read” (Spyridakis, 2000), or “readable” (Gregory, 2004)? Is the ISO/IEC26514:2008 standard’s “easy to understand” the same as the DQTT’s (Carey, et al., 2014) “easy to understand”?

Secondly, it is very difficult to objectively measure some of these quality traits. Although terms such as “complete,” “accurate,” or “clear” (for example, in Tarutz, 1992) are relatively straightforward, the definitions used by Albers (2005) and Manning (2008) listed in Table 3 are purely subjective. Eppler (2006) defines subjective quality as “meeting expectations” and objective quality as “meeting requirements,” and states that any approach to quality must take this twofold nature of quality into account. Similarly, Pirsig (1974), in his classic *Zen and the Art of Motorcycle Maintenance*, says that “quality is the relationship of the two [objective quality and subjective quality] with each other, (p. 304)” which means that it is important that our definition of documentation quality includes both types.

Lastly, the fact that there are so many different definitions of documentation quality is itself a problem. Although it is true that different definitions are appropriate under different circumstances, in different contexts, and for different readers, there is no single trait in any of the definitions in Table 3 that can be found in all of them. It is highly unlikely that the definition of documentation quality changes so much from situation to situation (and from reader to reader, regardless of the type of information) that there is not at least some overlap between them.

This lack of a clear and unified definition of documentation quality presents documentation providers with an inability to create a robust and repeatable way to collect feedback. A Google search for the phrase “documentation feedback” returns documentation feedback surveys from a wide variety of companies—but none of them ask the same questions in the same way, and none of them can be easily compared to the others.

Criteria Needed to Define Documentation Quality

To properly define documentation quality, we must therefore meet the following criteria:

- *The definition must be from the readers' point of view:* Because it is the readers alone who determine if the document we give them is high quality or not, any definition of documentation quality must come from the readers' perspective. Writers can come up with any number of quality attributes that they think are important, but, at the end of the day, what they think is not as important as what the readers think.
- *The definition must be clear and unequivocal:* Both readers and writers have to “be on the same page” when it comes to what makes a document high quality. Misunderstandings of what readers actually want from the documentation are a recipe for unhappy readers.
- *The definition must cover all possible aspects of quality:* Quality is a multidimensional concept, and we must be sure that any attempt to define it is as comprehensive as possible. A definition that emphasizes one dimension over another, or leaves one out altogether, cannot be considered to be a usable definition.
- *The definition must have solid empirical backing:* To be considered a valid definition of documentation quality, serious research must be done to give it the proper theoretical underpinnings. Years of experience or anecdotal evidence can act as a starting point, but if we are serious about our professionalism and our documentation, we need more.

Building a Comprehensive Definition of Documentation Quality

The goal of this paper is to use the four documentation quality criteria presented in the previous section to

create a preliminary, focused, clearly defined, and reader-oriented model for collecting meaningful and actionable feedback from readers, based on how they define documentation quality. To do this, I turned to a groundbreaking study by Wang and Strong (1996) that developed a “comprehensive, hierarchical framework of data quality attributes (p. 8)” that were important to what they called “data consumers”.

Wang & Strong's Data Quality Framework

The underlying assumption of Wang and Strong's (1996) approach was that, to improve data quality, they needed to empirically understand what data quality meant to data consumers—data quality cannot be approached intuitively or theoretically because these do not truly capture the “voice of the data consumer.”

To do this, they ran a two-part study. The first part was divided into two “stages”: In the first stage, they collected an extensive list of 179 potential data quality attributes from 137 data consumers; in the second stage, they asked a different group of 355 data consumers to rate the importance of 118 of these attributes (61 attributes were removed as the result of a pretest) using a unipolar, nine-point, closed-ended ordinal scale (often called a Likert scale), with **1** being “extremely important” and **9** being “not important at all.” Using factor analysis of the importance ratings to uncover underlying data structures and their stability, they grouped these attributes into 20 data quality dimensions.

Because Wang and Strong (1996) decided that 20 data quality dimensions were too many for practical evaluation purposes, the second part of the study was designed to sort them into a smaller set of meaningful data quality categories. This second part was divided into two “phases”—in the first phase, they asked 18 data consumers to sort the dimensions into three to five groups, and then name the groups. As a result, five dimensions that were not consistently assigned to a category and had low importance ratings were eliminated, and four preliminary quality categories were identified: Intrinsic quality, Contextual quality, Representational quality, and Accessibility quality (ICRA). In the second phase, 12 other data consumers were asked to sort the remaining 15 dimensions into the predefined categories to confirm that the dimensions indeed belonged in these four categories. The categories and dimensions that make up Wang & Strong's hierarchical data quality framework are described in Table 4.

Beyond Accuracy

Based on their categories, Wang and Strong (1996) concluded that high-quality data must be:

- Intrinsically good
- Contextually appropriate for the task
- Clearly represented
- Accessible to the consumer

Wang & Strong claim that their proposed data quality framework of four ICRA categories and 15 dimensions can be used as a basis for further studies that measure perceived data quality in specific work contexts. They state that the framework is methodologically sound, complete from the data consumers' perspective, and is useful for measuring, analyzing, and improving data quality. They cite "strong and convincing" anecdotal evidence that the framework has been used effectively in both industry and government, and has helped information managers better understand their customers' needs by "identifying potential data deficiencies, operationalizing the measurement of these data deficiencies, and improving data quality along these measures. (p. 9)"

Subsequent research on this framework has found that it works very well in identifying and solving information quality issues, and that its underlying

methodology (information categories and dimensions) are robust and applicable to real-life information quality situations (Strong, Lee, & Wang, 1997a, 1997b; Wang, 1998; Kahn, Strong, & Wang, 2002; Pipino, Lee, & Wang, 2002; Lee et al., 2002).

Eppler (2006) evaluated seven different information quality frameworks in the literature to determine if they:

- Provide a systematic and concise set of criteria according to which information can be evaluated
- Provide a scheme to analyze and solve information quality problems
- Provide a basis for information quality measurement and benchmarking
- Provide the research community with a conceptual map that can be used to structure a variety of approaches, theories, and information-quality-related phenomena

Eppler divided his evaluation criteria into what he called "analytic criteria" (clear definitions, positioning of the framework within the existing literature, and a consistent and systematic structure) and "pragmatic criteria" (conciseness of the framework, real-world examples to demonstrate it, and tools with which

Table 4. Wang & Strong's (1996) data quality categories and dimensions

Category	Dimensions
Intrinsic Quality: Data must have quality in its own right.	Accuracy: The data is correct, reliable, and certified free of error. Believability: The data is true, real, and credible. Objectivity: The data is unbiased (unprejudiced) and impartial. Reputation: The data is trusted or highly regarded in terms of its source or content.
Contextual Quality: Data must be considered within the context of the task at hand.	The Appropriate Amount: The quantity or volume of the available data is appropriate. Completeness: The data is of sufficient breadth, depth, and scope for the task at hand. Relevance: The data is applicable and helpful for the task at hand. Timeliness: The age of the data is appropriate for the task at hand. Value: The data is beneficial and provides advantages from its use.
Representational Quality: Data must be well represented.	Conciseness: The data is compactly represented without being overwhelming (that is, it is brief in presentation, yet complete and to the point). Consistency: The data is always presented in the same format and is compatible with previous data. Ease of Understanding: The data is clear, without ambiguity, and easily comprehended. Interpretability: The data is in an appropriate language and units, and the definitions are clear.
Accessibility Quality: Data must be easy to retrieve.	Accessibility: The data is available or easily and quickly retrievable. Security: Access to the data can be restricted, and hence, kept secure.

to apply it). He determined that Wang and Strong's (1996) framework "offers both a solid foundation in existing literature and practical applications (p. 54)" and "is the only framework in the series of seven that strikes a balance between theoretical consistency and practical applicability. (p. 54)"

Applying the Wang and Strong (1996) Data Quality Framework to Documentation Quality

Can Wang and Strong's (1996) data quality framework be applied to documentation quality as well? Can we use these quality categories and dimensions to create a reader-oriented definition of documentation quality that we can use to get meaningful and actionable feedback?

On the surface, it seems that Wang and Strong's (1996) data quality framework is a good fit for our purposes. Like data quality, to understand documentation quality, we cannot rely on an intuitive or theoretical approach; we must get to the data consumers—that is, our readers. Like data quality, to improve documentation quality, we must understand what documentation quality really means to our readers. And, like data quality, high-quality documentation must be:

- Intrinsically good
- Clearly represented
- Contextually appropriate for the task
- Accessible to the reader

But it is important to make a point clear here before we continue comparing data quality to documentation quality. Wang and Strong's (1996) framework focuses on data quality—are the terms "data" and "documentation" synonymous and interchangeable?

"Data" are abstract, raw, and meaningless without context (Eppler, 2006; Kumar, 2009). However, when data are organized in a logical way and given context that can be understood by someone or something, they become "information" (Chisholm, 2012). In other words, information is data in a meaningful form (ISO 9000, 2015).

While Wang and Strong's (1996) originally stated object was data quality, it seems to be more accurate to call it information quality (Wang, 1998; Lee et al., 2002; Arazy, Kopak, & Hadar, 2017). When data consumers use data, they can no longer really be called

data because they are now being given context by the consumer.

Documentation, then, is not data, but rather information—information that is intended to be used by readers in a particular context for a particular reason. High-quality documentation is high-quality information that is transformed into knowledge: Readers take the information, interpret it, evaluate it, use it to connect with prior knowledge, and then apply it to new contexts (see Eppler, 2006).

Wang and Strong's (1996) assumptions about the need for an empirical approach to determine what information consumers want, and what high-quality information must be, are parallel to those we are making about documentation quality. Because their framework is really a framework for measuring information quality, and the documentation we send to our readers is used as information, there is a strong basis for attempting to use this framework to create a model for accurately measuring what our readers consider to be high-quality documentation—and then make plans to improve what needs to be improved.

A Proposed Documentation Quality Feedback Model

Using Wang and Strong's (1996) research findings, the goal of this paper is to create a preliminary, focused, clearly defined, and reader-oriented model for collecting meaningful and actionable feedback from readers, based on how they define documentation quality. To be credible, this model must:

- Focus only on the most important issues
- Contain the fewest possible number of questions
- Use universally understood terminology
- Approach the issues from the readers' point of view
- Collect unambiguous responses from readers
- Enable writers to easily understand and address readers' issues

Wang and Strong's (1996) information quality framework enables us to meet all of these criteria:

- There are only four information quality categories:
 - Intrinsic
 - Contextual
 - Representational
 - Accessibility

Beyond Accuracy

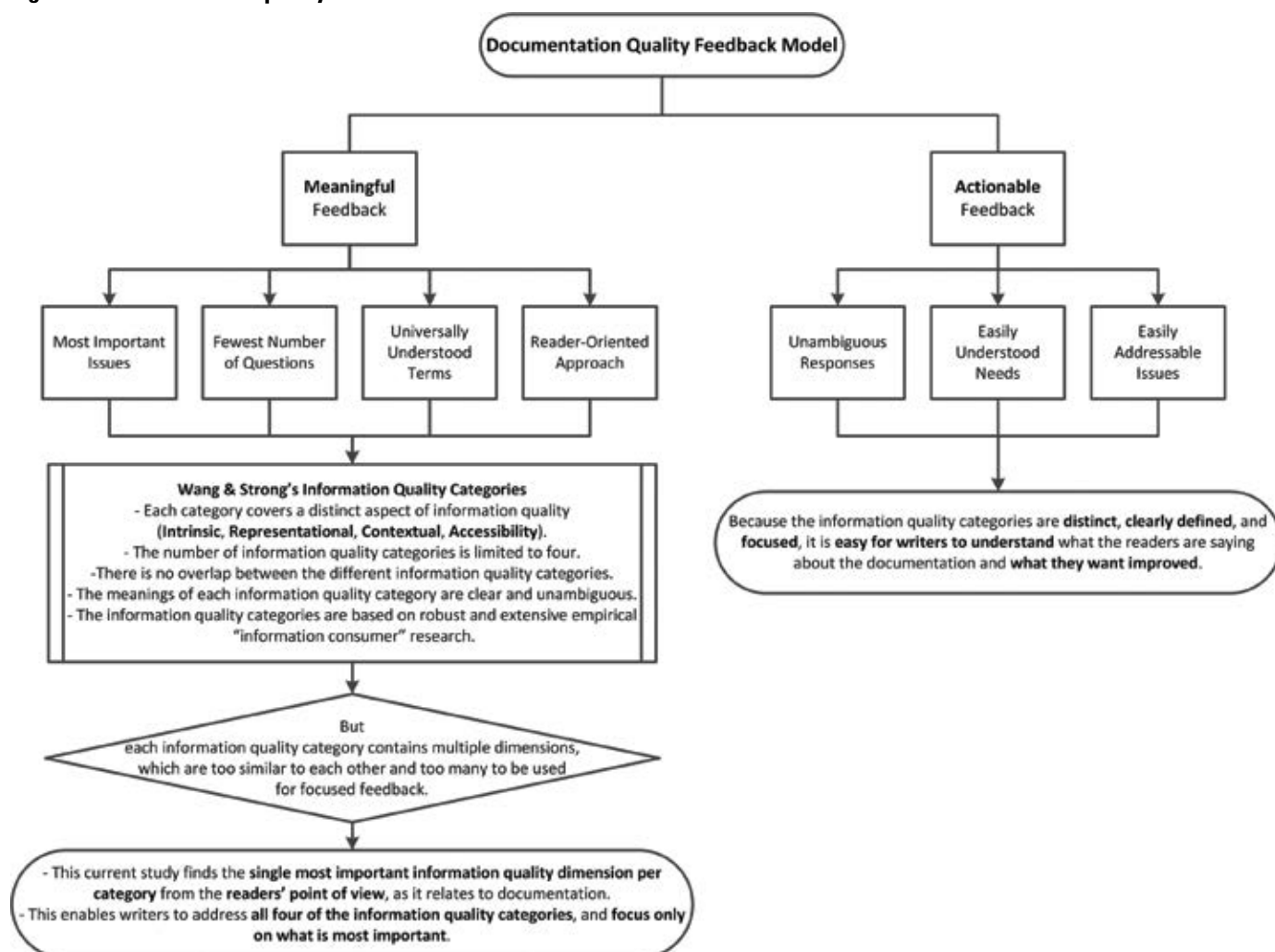
- Each category covers a distinct measurement of information quality with no overlap between them.
- The categories are based on robust and extensive user research, and their meanings and dimensions are succinct and clearly understood.

Unfortunately, there are a few drawbacks with directly using Wang and Strong's information quality framework for collecting documentation feedback:

- The categories do not lend themselves easily to the creation of feedback questions—for example, we cannot ask readers, “How was the intrinsic quality of the documentation?”
- The gradations between each category's dimensions are too fine to be used for focused feedback.
- There are too many dimensions for practical use.

Given these issues, this current study focused on limiting the number of information quality dimensions we could use to define documentation quality. Arazy and Kopak (2011) and Arazy, Kopak, and Hadar (2017) list a number of studies that show that information users may perceive certain information quality dimensions to be more important than others. Our approach was to find the single most important information quality dimension for each of the four information quality categories (as they related to documentation), which would then be used to represent the entire category. These four dimensions (one per category) would then serve as the basis for a documentation quality feedback model. A schematic diagram of the proposed documentation quality feedback model is shown in Figure 1.

Figure 1. Documentation quality feedback model



Methods

Questionnaires

A questionnaire was developed, asking readers to rate Wang and Strong's (1996) 15 information quality dimensions by their perceived of importance, as they applied to documentation. Some minor modifications were made to the original information quality dimension definitions (the word "data" in the definitions was changed to "information in the documentation").

The link to the questionnaire (<https://www.surveymonkey.com/r/V2ZX5FP>) was sent to technical communicators (who were contacted via the STC website and SIG groups, as well as numerous technical writing groups on Facebook) and customer service personnel from various companies, who were then asked to send it on to their readers. This was done to ensure that a broad, worldwide range of readers from different fields answered the questionnaires, and that the people answering the questions were the people who actually read and used the documentation.

For a list of the sources of reader questionnaire responses, see APPENDIX A: READER QUESTIONNAIRE SOURCES.

Rating and Data Analysis

Like in the second stage of the first part of Wang and Strong's (1996) study, information quality dimension rating was done on a nine-point Likert scale, with 1 being labeled "extremely important" and 9 being labeled "not important at all." Even though such a scale is cumbersome, it was used in this study to get a finer gradation between the weights; Griffin and Hauser (1993) found that a nine-point Likert scale is acceptable for measuring the importance of customer needs. Fewer points on a scale can lead to a broader weight range; more points can show differences better, especially in a study like this one with a small sample size. In future studies that validate the robustness of this model, it is recommended that a larger sample size be studied and a five-point Likert scale be used (as suggested by Barnum, 2002; Wiley, 2006; Dillman, Smyth, & Christian, 2014; Revilla, Saris, & Krosnick, 2014).

The dimensions were sorted by information quality category, and the mean weight and standard deviation of each of them was calculated—the lower the

weight, the more important the dimension. For each information quality category, the information quality dimension with the lowest rating was considered to be the most important, and represented the entire category. A one-way ANOVA (run at <http://statpages.org/anova1sm.html>) was completed to determine whether the differences in mean weights between the dimensions in each category were significant (set as $p < 0.05$).

Results

A total of 81 readers responded to the reader questionnaire, but only 80 of them rated all of the information quality dimensions. The following information quality dimensions had the highest ratings (that is, the lowest mean weights) per information quality category:

- From the Intrinsic information quality category = Accurate (n = 81, mean = 1.80, SD = 1.18), as shown in Figure 2 and Table 5

Figure 2. Intrinsic documentation quality dimension ratings

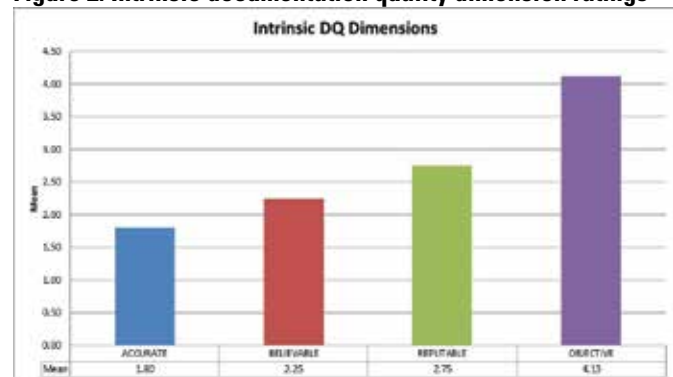


Table 5. Descriptive statistics for intrinsic documentation quality dimensions

Quality Dimension	n	Mean	SD
ACCURATE	81	1.80	1.18
BELIEVABLE	81	2.25	1.77
REPUTABLE	80	2.75	1.77
OBJECTIVE	80	4.13	2.20

- From the Contextual information quality category = Relevant (n = 81, mean = 1.96, SD = 1.22), as shown in Figure 3 and Table 6

Beyond Accuracy

Figure 3. Contextual documentation quality dimension ratings

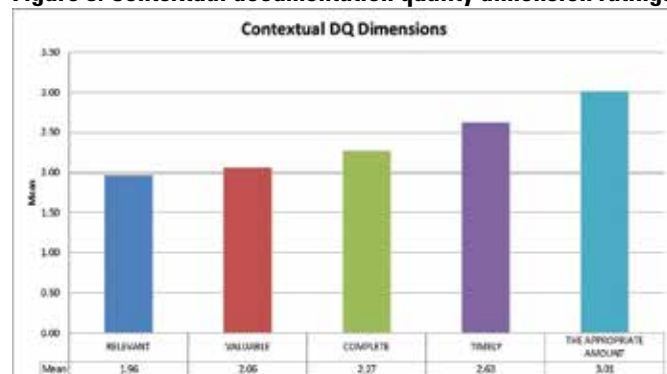


Table 6. Descriptive statistics for contextual documentation quality dimensions

Quality Dimension	n	Mean	SD
RELEVANT	81	1.96	1.22
VALUABLE	81	2.06	1.23
COMPLETE	81	2.27	1.36
TIMELY	80	2.63	1.82
THE APPROPRIATE AMOUNT	81	3.01	2.08

- From the Representational information quality category = Easy to Understand (n = 81, mean = 1.91, SD = 1.15), as shown in Figure 4 and Table 7

Figure 4. Representational documentation quality dimension ratings

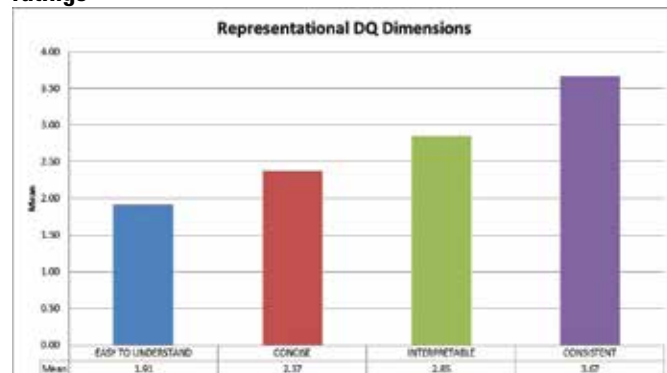


Table 7. Descriptive statistics for representational documentation quality dimensions

Quality Dimension	n	Mean	SD
EASY TO UNDERSTAND	81	1.91	1.15
CONCISE	81	2.37	1.55
INTERPRETABLE	80	2.85	1.79
CONSISTENT	81	3.67	2.20

- From the Accessibility information quality category = Accessible (n = 81, mean = 2.20, SD = 1.46), as shown in Figure 5 and Table 8

Figure 5. Accessibility documentation quality dimension ratings

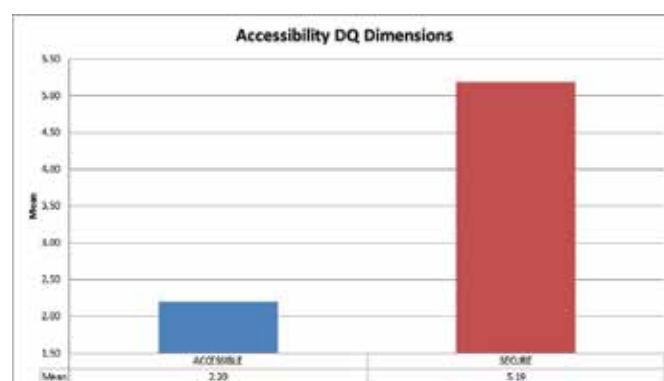


Table 8. Descriptive statistics for accessibility documentation quality dimensions

Quality Dimension	n	Mean	SD
ACCESSIBLE	81	2.20	1.46
SECURE	81	5.19	2.41

The full range of information quality dimension mean weights and descriptive statistics is presented in Figure 6 and Table 9.

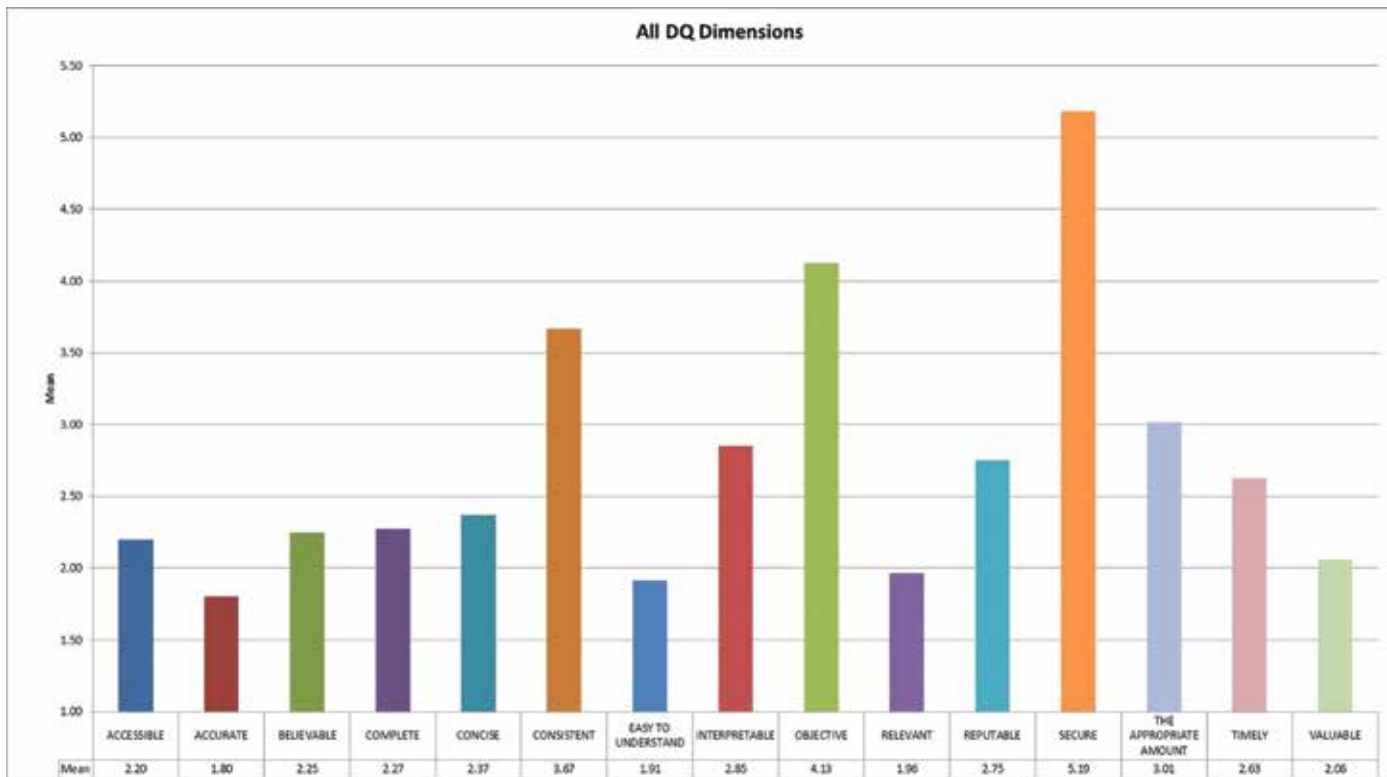


Figure 6. All documentation quality dimension ratings

Table 9. Descriptive statistics for all documentation quality dimensions

Quality Category	Quality Dimension	n	Mean	SD
Accessibility	ACCESSIBLE	81	2.20	1.46
Intrinsic	ACCURATE	81	1.80	1.18
Intrinsic	BELIEVABLE	81	2.25	1.77
Contextual	COMPLETE	81	2.27	1.36
Representational	CONCISE	80	2.37	1.55
Representational	CONSISTENT	81	3.67	2.20
Representational	EASY TO UNDERSTAND	81	1.91	1.15
Representational	INTERPRETABLE	80	2.85	1.79
Intrinsic	OBJECTIVE	80	4.13	2.20
Contextual	RELEVANT	81	1.96	1.22
Intrinsic	REPUTABLE	81	2.75	1.77
Accessibility	SECURE	81	5.19	2.41
Contextual	THE APPROPRIATE AMOUNT	81	3.01	2.08
Contextual	TIMELY	80	2.63	1.82
Contextual	VALUABLE	81	2.06	1.23

Beyond Accuracy

Analysis

The focus of this study was to create a model for collecting meaningful and actionable documentation quality feedback based on Wang and Strong's (1996) information quality categories and dimensions, using readers' definitions of documentation quality and the criteria listed previously for getting this kind of feedback.

To accomplish this, I looked for the most important dimension per ICRA information quality category, which was to be understood as the most important criteria for how readers define documentation quality. The results of the readers' ratings show that readers expect the documentation they get to be accurate, relevant, easy to understand, and accessible (AREA). Although this might seem self-evident, it provides a strong empirical underpinning for the claim that documentation quality can be defined using a small yet comprehensive set of clear and unambiguous information quality dimensions.

Intrinsic Documentation Quality

The Accurate information quality dimension was the most important dimension in the Intrinsic information quality category ($n = 81$, mean = 1.80, SD = 1.18). It was defined in the reader questionnaire as "the information in the documentation is correct, reliable, and certified free of error." For example, if an out-of-date screen capture is used in a procedure, then the information in the documentation is not "accurate."

The second most important dimension in the Intrinsic information quality category was Believable ($n = 81$, mean = 2.25, SD = 1.77). It was defined in the reader questionnaire as "the information in the documentation is true, real, and credible." For example, if one section in a document describes the system in one way, and another section describes it in a different way (even if both descriptions are technically accurate), then the information in the document is not "believable," because the reader will be confused by the different descriptions and doubt the credibility of both (see Strong, Lee, & Wang, 1997a, 1997b; Pipino, Lee, & Wang, 2002; Eppler, 2006).

The difference between these two dimensions is almost significant ($F = 3.6246$, $p = 0.0587$). It is possible that, were the sample size larger, the difference might have been significant; further research is needed to determine whether this is the case.

Nevertheless, the difference between the Accurate and Believable dimensions is meaningful. Information can be accurate but not believable, or believable but not accurate: That is, readers might trust well-presented information in a document, even though it is inaccurate, and they might dismiss accurate information because they do not trust the source. This is a common complaint, for instance, with health-related information found on the Internet: A lot of information is available, but readers have very limited tools available to judge its accuracy and must rely only on how believable it is (Kim et al., 1999; Eysenbach et al., 2002). However, the accuracy of information is logically more important than its believability: Inaccurate information is useless to readers, regardless of how believable it is.

The differences between the Accurate information quality dimension and the other dimensions in this category were statistically significant.

Contextual Documentation Quality

The Relevant information quality dimension was the most important dimension in the Contextual information quality category ($n = 81$, mean = 1.96, SD = 1.22). It was defined in the reader questionnaire as "the information in the documentation is applicable and helpful for the task at hand." For example, if details are included about a procedure that is not appropriate for the reader's skill level, then the information in the documentation is not "relevant."

The second most important dimension in the Contextual information quality category was Valuable ($n = 81$, mean = 2.06, SD = 1.23). It was defined in the reader questionnaire as "the information in the documentation is beneficial and provides advantages from its use." For example, if a procedure describes how to set up a complicated system but not in the most efficient way, then the information in the documentation is not "valuable" (even if it is relevant).

The difference between these two dimensions is not significant ($F = 0.2699$, $p = 0.6041$). Nevertheless, there is still a functional difference between the Relevant and Valuable dimensions. If the information in the document is "applicable and helpful for the task at hand," it means that it helped readers do what they needed to do or know what they needed to know—no more, and no less. For example, a document can instruct readers how to set up a complicated system, tell them how to manage network clusters, or explain the hardware architecture.

On the other hand, if the information in the document is “beneficial and provides advantages from its use,” then it means it was more than just relevant: It gave the readers something extra. For example, the document helped them set up a complicated system in the most efficient way, told them how to manage network clusters more effectively, or explained the advantages of the hardware architecture.

A document can be “helpful” but not “beneficial” or “advantageous”: For example, the reader used the information to set up the system, but it took three hours when it could have taken two; the reader can manage the network clusters, but it is more complicated than it needs to be; the reader understands the hardware architecture, but does not understand why it is this way.

The third most important dimension in the Contextual information quality category was Complete ($n = 81$, mean = 2.27, SD = 1.36). It was defined in the reader questionnaire as “the information in the documentation is of sufficient breadth, depth, and scope for the task at hand.” For example, if a procedure is missing a step or details that help readers, then the information in the documentation is not “complete.”

The difference between this and the Relevant dimension is also not significant ($F = 2.3320$, $p = 0.1287$). Yet, here too there is a functional difference between the two dimensions.

In Wang and Strong’s (1996) information quality framework, the Complete dimension is in the Contextual information quality category and not in the Intrinsic information quality category. While many information quality studies categorize “completeness” together with “accuracy” (see, for example, the meta-review in Eysenbach et al. (2002)), here the idea of information completeness is purely contextual because it impacts how the information can be used for the “task at hand.” As Lee et al. (2002) explain, completeness is an intrinsic dimension when referring to any missing data, but is a contextual dimension when referring only to missing data actually needed by users.

While true that incomplete documentation is problematic, the Relevant dimension is a much higher-level information quality dimension than Complete is because it measures the ultimate contextual usability of the information in the document. Information in a document can be complete but still irrelevant: if a procedure that is not appropriate for the reader’s skill level is provided, it does not matter if it is complete

or not, but even incomplete information can still be “applicable and helpful” to a reader to some degree.

Further research is needed to determine which of these three closely rated dimensions (Relevant, Valuable, and Complete) best represent the Contextual information quality category; however, it seems logical that the Relevant dimension should be the most important contextual dimension. Because documentation is never read in a vacuum and is only used in context, the usability of its information depends mainly on its ability to help readers do the “task at hand” (even if not in the most advantageous way), which can be accomplished even if there are issues with how valuable or complete the information is. On the other hand, irrelevant information in a document cannot add any value, and irrelevant information that is complete is still irrelevant.

The differences between the Relevant information quality dimension and the other dimensions in this category were statistically significant.

Representational Documentation Quality

The Easy to Understand information quality dimension was the most important dimension in the Representational information quality category ($n = 81$, mean = 1.91, SD = 1.15). It was defined in the reader questionnaire as “the information in the documentation is clear, without ambiguity, and easily comprehended.” For example, if the language used is ungrammatical or inappropriate for the intended audience, then the information in the documentation is not “easy to understand.”

The second most important dimension in the Representational information quality category was Concise ($n = 80$, mean = 2.37, SD = 1.55). It was defined in the reader questionnaire as “the information in the documentation is compactly represented without being overwhelming (that is, it is brief in presentation, yet complete and to the point).” For example, if a conceptual topic is overly detailed, then the information in the documentation is not “concise” (even if it is easy to understand). More information is not necessarily better and can present problems for readers who are trying to apply it and put it into practice (Strong, Lee, & Wang, 1997b).

The difference between these two dimensions is significant ($F = 4.5810$, $p = 0.0339$), indicating that readers feel strongly about how easy it is to

Beyond Accuracy

understand the information in the documentation. They do not want to struggle to understand what is written, and consider the grammar, style, and clarity of the documentation to be important. While the conciseness of the text might be a “nice to have,” ease of understanding is a “must have.”

The differences between the Easy to Understand information quality dimension and the other dimensions in this category were also statistically significant.

Accessibility Documentation Quality

The Accessible information quality dimension was the most important dimension in the Accessibility information quality category ($n = 81$, mean = 2.20, $SD = 1.46$). It was defined in the reader questionnaire as “the information in the documentation is available or easily and quickly retrievable.” For example, if the search functionality does not return useful results or the links in the table of contents do not work, then the information in the documentation is not “accessible.”

The second most important dimension in the Accessibility information quality category was Secure ($n = 81$, mean = 5.19, $SD = 2.41$). It was defined in the reader questionnaire as “access to the information in the documentation can be restricted, and hence, kept secure.” For example, if readers can make their own changes to the documentation after it has been published, then the information in the documentation is not “secure.”

The difference between these two dimensions is very significant ($F = 91.2060$, $p < 0.0000$), indicating that readers have strong, diametrically opposite opinions about these two dimensions. Readers must be able to easily find and retrieve the information they need from the documentation; however, they do not particularly care if the information is secure. In fact, it seems that readers prefer that access to the information not be restricted, possibly so they can update it and modify it themselves as needed (see Strong, Lee, & Wang, 1997a). Further research into this is recommended.

Practical Applications of the Documentation Quality Feedback Model

This study takes Wang and Strong’s (1996) ICRA information quality categories and dimensions and applies them to documentation quality. By asking readers

to rate the different dimensions that make up each category, I was able to find the single most important information quality dimension per category and create a reader-oriented documentation quality definition:

- Intrinsic = Accurate
- Contextual = Relevant
- Representational = Easy to Understand
- Accessibility = Accessible

This empirical, reader-oriented definition of documentation quality can be applied in many practical ways.

Collecting Meaningful and Actionable Documentation Quality Feedback

Because the ICRA information quality categories are distinct, clearly defined, and focused, writers can use the representative AREA information quality dimensions to easily understand what their readers are telling them about the documentation (meaningful feedback) and what they want improved (actionable feedback).

The proposed documentation quality feedback model asks readers only the following four questions:

- Could you find the information you needed in the document?
- Was the information in the document accurate?
- Was the information in the document relevant?
- Was the information in the document easy to understand?

These four questions can be applied to all methods of collecting meaningful and actionable documentation quality feedback. For examples, let’s look at a few of Wilson’s (1999) techniques for testing the usability of documentation.

Usability edit

A usability edit of the documentation is defined by Wilson (1999) as a “detailed edit of the instructions,” but should really be applied to both procedural as well as conceptual information. Users are asked to read through the document and mark things that are “hard to understand, wordy, inconsistent,” and so on.

If we ask the users doing the usability edit to apply the proposed documentation quality feedback model and focus only on the four most important reader-oriented aspects of documentation quality—the accuracy, relevance, ease of understanding, and

accessibility of the information in the documentation—we are much more likely to get the meaningful and actionable feedback we are looking for.

Documentation surveys

A documentation survey is a short questionnaire sent to readers that asks them about the usability of the documentation. This popular way to collect feedback can be created easily and emailed to a large number of users (for example, as an online survey). However, surveys have drawbacks, and the sample size is often small and biased.

Our proposed documentation quality feedback model using the AREA information quality dimensions is a good fit for the creation of surveys that are as focused and succinct as possible, which is a critical component of survey design (see Table 1).

For an example of how a documentation survey based on this model might look, see APPENDIX B: DOCUMENTATION FEEDBACK SURVEY (EXAMPLE) or go to <https://www.surveymonkey.com/r/VJL6QHD>.

Training classes

According to Wilson (1999), feedback about the usability of the documentation can be collected by sitting in on product training sessions and asking the participants to note any problems they come across in the documentation.

Working together with trainers, technical communicators can collect a great deal of meaningful and actionable feedback from real users by asking them to focus only on the four AREA information quality dimensions when they work with the documentation.

Helping Writers Understand What Is Important to Readers When Feedback Is Unavailable

It is important to ensure that writers understand how readers define documentation quality—relying on their “gut instincts” when it is impossible to get direct, meaningful, and actionable feedback is a risky proposition. If writers emphasize dimensions that readers do not, or incorrectly assume that readers put more importance on certain dimensions than others, then the quality of the documentation they create will not match what their readers expect, want, or need.

Using the ICRA information quality categories and their dimensions to compare and contrast how writers

and readers define documentation quality, as well as how writers assume readers define it, will go a long way toward increasing reader satisfaction, because it will give writers a sound theoretical basis for focusing on certain dimensions of documentation quality in their writing (for the results of a study that did this, see Strimling, 2018).

Similarly, this proposed model can be used in academic technical communication courses to teach students about reader-oriented documentation quality measures. Instructors can use the ICRA information quality categories and the four AREA dimensions to provide evidence-based materials for teaching students how to write quality documentation that readers will find useful.

Providing Reliable Methods and Metrics for Measuring Documentation Quality

The four AREA dimensions that make up the reader-oriented definition of documentation quality at the heart of this proposed feedback model can be used to classify and sort existing internal or external feedback. This can then be presented to management as clear and reliable metrics about the documentation that will help determine where more emphasis might need to be invested.

For example, if the feedback that is being received indicates that a majority of the issues are about the accuracy and relevance of the documentation, then management can make a clear decision about who in the organization is responsible for addressing these issues and can later compare before-and-after feedback to see if the percentage of these complaints has decreased.

Similarly, technical communicators (who, by and large, are responsible mainly for the Easy to Understand dimension) can show their managers how good writing can lower complaints about this issue.

Creating a Common Documentation Quality Terminology

The documentation quality definition proposed here can provide writers with unambiguous terminology they can use when discussing, planning, and analyzing documentation needs with SMEs and other writers. The AREA information quality dimensions (and their underlying ICRA categories) cover all aspects of documentation quality and are understood in the same way by all parties. This will ensure that everyone

Beyond Accuracy

involved understands what readers want and how to get there—which should be the goal of all people involved in creating documentation.

Anecdotal, it seems that SMEs do actually find it much easier to understand documentation needs and plans when focusing on the four AREA dimensions—they know very well what the terms mean, who is responsible for what, and how to go about addressing the issues.

Future Directions

This is only a preliminary study, intended to create a framework for a documentation quality feedback model based on empirically tested and distinct information quality categories and dimensions, and using a reader-oriented definition of documentation quality.

To make this model more robust, it is suggested that this study be replicated with a larger sample size (preferably more than 200 readers) and use a narrower, fully labeled, five-point Likert scale for determining the relative mean importance weights of each dimension. This will test the stability of the Accurate, Relevant, Easy to Understand, and Accessible information quality dimensions as the most important dimensions per ICRA category.

To further increase the robustness of this model, it might also be useful to apply the Kano Model of customer satisfaction to the dimensions. The Kano Model is uniquely suited to measuring reader-oriented documentation quality dimensions because its goal is to demonstrate how different categories of customer requirements influence customer satisfaction in different ways (Verduyn, 2013).

Briefly, the Kano Model is based on the idea that customer satisfaction with a product's features depends on the level of functionality that is provided (Zacarias, 2015). The model consists of two measurable dimensions:

- Satisfaction, from “Frustrated” to “Delighted”
- Execution (or Functionality), from “Done badly or not at all” to “Done well”

These two dimensions combine to form the following four quadrants (or categories) of feature quality:

- Must-Be: These are features that are expected and must be present. Their presence does not increase satisfaction, but their absence decreases it.

- Performance: These are features that the customer expects to be present, and the better they are executed, the greater the satisfaction.
- Attractive: These are features that the customer does not expect to be present, but when they are, they increase satisfaction.
- Indifferent: These features have no effect on customer satisfaction, regardless of if they are expected or not.

For a more in-depth discussion of the Kano Model and how to apply it, see Verduyn (2013) and Zacarias (2015).

In an exploratory pilot study using the Kano Model ($n = 41$), all but one of the information quality dimensions were located in the Performance quadrant, with Accurate, Relevant, and Easy to Understand located much closer to the Must-Be quadrant, and Accessible located firmly within the Performance quadrant. Only the Secure dimension (from the Accessibility information quality category) was clearly located in the Indifferent quadrant. The importance ratings of the dimensions were similar to those in this current study.

Another possible avenue of future research on this proposed model is to look at the measurability and inter-rater reliability of each of the AREA information quality dimensions.

Arazy and Kopak (2011) investigated whether a small subset of Wang and Strong's (1996) information quality dimensions were inherently better indicators of information quality, because they could be reliably measured (which they defined as “the degree to which independent assessors are able to agree when rating [information] objects on these various dimensions (p. 89)”). They posited that “to draw any conclusion from studies on information quality, it is required that measurement instruments produce high inter-rater reliability, (p. 90)” and that “an understanding of which dimensions tend to produce higher agreement than others would have implications for a quality-assessment procedure. (p. 90)”

Their study focused on the Accurate, Complete, Objective, and “Representation” dimensions (they combined the Easy to Understand, Consistent, and Concise dimensions from the Representational information quality category, and named it “Representation”). They used this subset, not because

they felt that these were the most important dimensions, but because this subset “reasonably represented the different kinds of information quality dimensions that others have viewed as important and that researchers have employed with success” (Arazy, Kopak, and Hadar, 2017, p. 406). They did not include any of the Accessibility information quality category dimensions.

Arazy and Kopak (2011) found that inter-rater agreement was higher for the Contextual and Representational information quality dimensions they tested (Complete and “Representation” respectively) and lower for the Intrinsic information quality dimensions (Accurate and Objective). They suggested that this might be because the dimensions in the former categories have quick heuristics that can be used for rating, while the dimensions in the latter have none (or hard-to-identify ones). In a follow-up study, Arazy, Kopak, and Hadar (2017) looked deeper into the underlying heuristics (namely, the searching, stopping, and decision rules) used for these four dimensions, and found this to be the case.

Both Arazy and Kopak (2011) and Arazy, Kopak, and Hadar (2017) state that future studies should expand their research into the other information quality dimensions. Based on this proposed documentation quality feedback model, it is suggested that the Relevant, Easy to Understand, and Accessibility dimensions are good candidates for this effort (in addition to the Accurate dimension that was already tested in the previous studies).

Finally, and most importantly, this documentation quality feedback model must be tested in the field. The ICRA information quality categories and the four AREA dimensions can be used in real-life situations (as suggested in the Practical Applications section) to see if they really do collect meaningful and actionable documentation quality feedback, help writers understand what is important to readers, provide reliable methods and metrics for measuring documentation quality, and create a common documentation quality terminology for both technical communicators and SMEs.

Having a robust, empirically based model for collecting meaningful and actionable documentation quality feedback that does all of this will contribute greatly to the field of documentation quality and enable technical communicators to provide high-quality documentation that makes their readers happy.

References

- Albers, M. (2005). The key for effective documentation: Answer the user's real question. *Usability Interface*, May, 5–8.
- Arazy, O., & Kopak, R. (2011). On the measurability of information quality. *Journal of the American Society for Information Science and Technology*, 62(1), 89–99.
- Arazy, O., Kopak, R., & Hadar, I. (2017). Heuristic principles and differential judgments in the assessment of information quality. *Journal of the Association for Information Systems*, 18(5), 403–432.
- Barnum, C. (2002). *Usability testing and research*. New York, NY: Longman.
- Barnum, C., & Carliner, S. (1993). Introduction. In Barnum, C. & Carliner, S. (Eds.), *Techniques for technical communicators* (pp. 1–11). Needham Heights, MA: Allyn and Bacon.
- Bartlett, P. (2012). *Your content, only better*. Acrolinx white paper. Acrolinx GmbH.
- Betz, M. (1996). Delivering customer satisfaction: our experiences with responding to customer feedback. *STC Proceedings from the 1996 STC Summit*.
- Bevis, K., & Hemke, K. (2008). Getting real-world feedback on your information: A case study. *STC Proceedings from the 2008 STC Summit*.
- Brown, D. (1995). Test the usability of research. *Technical Communication*, 42, 12–14.
- Bursaw, C., Alred, G., & Oliu, W. (1993). *Handbook of technical writing* (4th ed.). New York, NY: St. Martin's Press.
- Bush, D. (2001). Editing is magic. *Intercom*, June, 39 & 43.
- Carey, M., McFadden Lanyi, M., Longo, D., Radzinski, E., Rouiller, S., & Wilde, E. (2014). *Developing quality technical information: A handbook for writers and editors* (3rd ed.). Upper Saddle River, NJ: IBM Press (Pearson plc).
- Carliner, S. (1997). Demonstrating effectiveness and value: A process for evaluating technical communication products and services. *Technical Communication*, 44, 252–265.
- Chisholm, M. (2012). Data quality is not fitness for use. Retrieved from <http://www.information-management.com/news/data-quality-is-not-fitness-for-use-10023022-1.html>

Beyond Accuracy

- Cover, M., Cooke, D., & Hunt, M. (1995). Estimating the cost of high-quality documentation. *Technical Communication*, 42, 76–83.
- Crosby, P. (1979). *Quality is free*. New York, NY: McGraw-Hill.
- Deming, W. (1986). *Out of the crisis*. Cambridge, MA: MIT Press.
- Dillman, D., Smyth, J., & Christian, L. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). Hoboken, NJ: Wiley.
- Eppler, M. (2006). *Managing information quality: Increasing the value of information in knowledge-intensive products and processes* (2nd ed.). Berlin/Heidelberg, Germany: Springer.
- Eysenbach, G., Powell, J., Kuss, O., & Sa, E. (2002). Empirical studies for assessing the quality of health information for consumers on the World Wide Web: A systematic review. *JAMA*, 287(20), 2691–2700.
- Filippo, E. (2007). Merging usability practices with document design and development. *Intercom*, December, 8–12.
- Gregory, J. (2004). Writing for the Web versus writing for print: Are they really so different? *Technical Communication*, 51, 276–285.
- Griffin, A., & Hauser, J. (1993). The voice of the customer. *Marketing Science*, 12(1), 1–27.
- Hackos, J. (2002). *Content Management for Dynamic Web Delivery*. New York, NY: John Wiley & Sons, Inc.
- Hackos, J., Winstead, J., Gill, S., & Hartmann, M. (1995). Finding out what users need and giving it to them: a case-study at Federal Express. In *Measuring value added*, Redish, J. & Ramey, J. (Eds.). *Technical Communication*, 42, 322–327.
- Haramundanis, K. (2001). Commentary on “Little machines: understanding users understanding interfaces.” *ACM Journal of Computer Documentation*, 25(4), 128–131.
- Harker, J., & LaMalfa, K. (2009). *11 easy ways to improve your survey response rates*. Allegiance white paper. Allegiance Inc.
- Hart, G. (1997). Accentuate the negative: obtaining effective reviews through focused questions. *Technical Communication*, 44, 52–57.
- HCI, (2002). Simple metrics for documentation. Retrieved from www.hci.com.au/documentation-metrics, HCl Professional Services Pty Ltd.
- InfoPoll (1998). How to write a good survey. Retrieved from <http://www.accesscable.net/~infopoll/tips.htm>
- ISO 9000 (2015). *Quality management systems – Fundamentals and vocabulary*. Geneva, Switzerland: International Organization for Standardization. Retrieved from <https://www.iso.org/obp/ui/#iso:std:iso:9000:ed-4:v1:en>
- ISO/IEC 26514 (2008). *Systems and software engineering – Requirements for designers and developers of user documentation*. Geneva, Switzerland: International Organization for Standardization.
- Juran, J. (1988). *Juran on planning for quality*. New York, NY: The Free Press.
- Kahn, B., Strong, D., & Wang, R. (2002). Information quality benchmarks: Product and service performance. *Communications of the ACM*, 45(4), 184–192.
- Kim, P., Eng, T., Deering, M., & Maxfiel, A. (1999). Published criteria for evaluating health related Web sites: Review. *BMJ*, 318, 647–649.
- Kumar, M. (2009). Difference between data and information. Retrieved from <http://www.differencebetween.net/language/difference-between-data-and-information/>
- Lacki, T. (2010). *Capitalizing on customer feedback*. Allegiance/Peppers & Rogers Group white paper. Peppers & Rogers Group Inc.
- LaMalfa, K., & Caruso, B. (2009). *The top 10 voice of the customer (VOC) best practices*. Endeavor Management/Allegiance white paper. Allegiance Inc.
- Lee, Y., Strong, D., Kahn, B., & Wang, R. (2002). AIMQ: A methodology for information quality assessment. *Information & Management*, 40, 133–146.
- Manning, S. (2008). Using content management to improve content quality. *Presentation at the 2008 STC Summit*.
- Mead, J. (1998). Measuring the value added by technical documentation: A review of research and practice. *Technical Communication*, 45, 353–379.
- O’Keefe, S. (2010). Calculating document quality (QUACK). Retrieved from www.scriptorium.com/2010/05/calculating-document-quality-quack

- Parameswaran, J. (2005). Managing customer feedback on user documentation. *Usability Interface*, 11(4), 19–21.
- Pipino, L., Lee, Y., & Wang, R. (2002). Data quality assessment. *Communications of the ACM*, 45(4), 211–218.
- Pirsig, R. (1974). *Zen and the art of motorcycle maintenance*. New York, NY: William Morrow & Co.
- Quesenberry, W. (2001). On beyond help: Meeting user needs for useful online information. *Technical Communication*, 48, 182–188.
- Redish, G. (1993). Understanding readers. In C. Barnum & S. Carliner (Eds.), *Techniques for technical communicators* (pp. 14–41). Needham Heights, MA: Allyn and Bacon.
- Redish, G. (2008). Personal communication.
- Reeves, C., & Bednar, D. (1994). Defining quality: Alternatives and implications. *The Academy of Management Review*, 19(3), 419–445.
- Revilla, M., Saris, W., & Krosnick, J. (2014). Choosing the number of categories in agree-disagree scales. *Sociological Methods & Research*, 43(1), 73–97.
- Robinson, P., & Etter, R. (2000). *Writing and designing manuals* (3rd ed.). Boca Raton, FL: CRC Press.
- Smart, K., Seawright, K., & DeTienne, K. (1995). Defining quality in technical communication: A holistic approach. *Technical Communication*, 42, 474–481.
- Spyridakis, J. (2000). Guidelines for authoring comprehensible Web pages and evaluating their success. *Technical Communication*, 47, 359–382.
- StatPac Inc. (2014). Qualities of a good question. Retrieved from <https://statpac.com/surveys/question-qualities.htm>
- Strimling, Y. (2018). So you think you know what your readers want? *Intercom*, 65(6), 4–9.
- Strong, D., Lee, Y., & Wang, R. (1997a). Data quality in context. *Communications of the ACM*, 40(5), 103–110.
- Strong, D., Lee, Y., & Wang, R. (1997b). 10 potholes in the road to information quality. *Computer*, 30(8), 38–46.
- Tarutz, J. (1992). *Technical editing: The practical guide for editors and writers*. Reading, MA: Addison-Wesley.
- TechScribe Documentation Consultancy, (2004). What is good documentation? Retrieved from www.techscribe.co.uk/techw/good-documentation.htm
- Telcordia Technologies Generic Requirements Document – GR-454-CORE (1997). Retrieved from <http://telecom-info.telcordia.com/site-cgi/ido/docs.cgi?ID=SEARCH&DOCUMENT=GR-454&>
- Verduyn, D. (2014). *Discovering the Kano Model*. Retrieved from <http://www.kanomodel.com/>
- Wang, R. (1998). A product perspective on Total Data Quality Management. *Communications of the ACM*, 41(2), 58–65.
- Wang, R., & Strong, D. (1996). Beyond accuracy: What data quality means to data consumers. *Journal of Management Information Systems*, 12(4), 5–34.
- Weinstein, N., & Sandman, P. (1993). Some criteria for evaluating risk messages. *Risk Analysis*, 13(1), 103–114.
- Wiley, A. (2006). Customer satisfaction measurement. *Intercom*, July/August, 53–54.
- Wilson, C. (1999). Documentation usability techniques. Retrieved from <https://wiki.library.oregonstate.edu/confluence/download/attachments/5308515/documentation%20usability%20techniques.doc?version=1&modificationDate=1242330566000&api=v2>
- Zacarias, D. (2015). *The complete guide to the Kano Model: Prioritizing customer satisfaction and delight*. Retrieved from <https://foldingburritos.com/kano-model/>

About the Author

Yoel Strimling has been an editor for 20 years and currently works as the Senior Technical Editor/Documentation Quality SME for CEVA Inc. in Herzelia Pituach, Israel. Over the course of his career, he has successfully improved the content, writing style, and look and feel of his employers' most important and most used customer-facing documentation by researching and applying the principles of documentation quality and survey design. Yoel is a member of tekem Israel, a Senior Member of STC, and the editor of *Corrigo*, the official publication of the STC Technical Editing SIG. He can be contacted at yoel.strimling@ceva-dsp.com.

Manuscript received 2 March 2017, revised 24 October 2017; accepted 14 November 2018.

Beyond Accuracy

Appendix A: Reader Questionnaire Sources

The readers who participated in this study were from the following companies:

- Alcatel-Lucent International SAS, France
- Bell Mobility Canada
- Eastman Kodak - Network Administration, Belgium/USA
- Kodak GCG Canada
- Kodak Gesellschaft mit beschraenkter Haftung, Austria
- McKesson Corp., USA
- Oracle, Israel
- Oracle, UK
- Orange France
- Orange Niger
- Orange Polska Spolka Akcyjna
- Pressco Technology, USA
- Rogers Canada
- SAP AG
- Telstra Internet, Australia
- T-Mobile, USA
- Verizon Wireless, USA

Appendix B: Documentation Feedback Survey (Example)

In an effort to improve the quality of our documentation, as well as better understand your needs, we have created this quick survey to gather your feedback.

Please take a few moments to answer these questions about our documentation. If you do not want to give us feedback now, just close this window.

This survey is, of course, anonymous; however, if you do not mind if we contact you for more details, please give us your email address in Question 5.

Your feedback is very important to us, and we appreciate your contribution to the improvement of our documentation.

1. Which document(s) are you using?
<comment box>
2. Can you find the information you need in the documentation?
<checkboxes> **Yes**|**Partially**|**No**
<comment box> If there are problems with this, please provide more details.
3. Is the information in the documentation:
 - a. Accurate?
<checkboxes> **Yes**|**Partially**|**No**|**N/A (I cannot find the information I am looking for)**
<comment box> If there are problems with this, please provide more details here.
 - b. Easy to understand?
<checkboxes> **Yes**|**Partially**|**No**|**N/A (I cannot find the information I am looking for)**
<comment box> If there are problems with this, please provide more details here.
 - c. Relevant?
<checkboxes> **Yes**|**Partially**|**No**|**N/A (I cannot find the information I am looking for)**
<comment box> If there are problems with this, please provide more details here.
4. If you have additional comments or suggestions about our documentation, please write them here.
<comment box>
5. May we contact you if we have questions?
<checkboxes> **Yes**|**No**
<comment box> If **Yes**, please provide your email address here.

Lost in Content Management: Constructing Quality as a Global Technical Communication Metric

By Tatiana Batova

Abstract

Purpose: As the demand for creating multilingual information products increases, so does the need to manage the costs of translation and to have sound approaches to producing high-quality multilingual texts. While component content management (CCM) is committed to both cost reduction and quality improvement, it also presents several challenges to multilingual quality. In this article, I present approaches for constructing multilingual quality as a global TC metric.

Method: This article relies on the results of two surveys, one conducted through technical communication venues and one through technical translation venues.

Results: The surveys identified contradictions in the beliefs and practices of multilingual quality in CCM environments that led to problems with multilingual quality. I group the contradictions and problems with the help of the activity theory lens and, based on this grouping, present questions that global technical communication project teams can ask themselves to improve their work practices.

Conclusions: Effective communication between stakeholders and the knowledge of end-users are the two prerequisites to creating high-quality multilingual information products in CCM environments. Approaches to multilingual quality need to be collaborative and highly contextualized—dependent on business goals, user needs, and available resources. Taking the lead in multilingual quality management is one area for technical communicators to add value to their organizations.

Keywords: content strategy, component content management, translation/localization, quality, global technical communication

Practitioner's Takeaway:

- Provides a data-based analysis of CCM challenges and benefits for multilingual information products
- Outlines questions for global technical communication project teams to improve their multilingual quality practices with CCM
- Overviews a method for analyzing contradictions in multilingual quality practices with CCM and bringing these contradictions to successful resolutions
- Presents arguments for including various stakeholders in global CCM and for a focus on the users in global CCM

Introduction

As the international trade levels increase and production cycles shorten, the need for fast-produced, high-quality information products in multiple languages rises: After all, international consumers are more likely to buy products if they have information about them in their native language (Common Sense Advisory, 2014). Yet, the need for fast-produced, high-quality information products in multiple languages is accompanied by the necessity to push down the costs of creating such information products—to manage the costs of translations and localizations.

A set of technologies (e.g., translation memory (TM)¹, machine translation, and component content management (CCM)² systems) and methods (e.g., writing for translation, topic-based writing³, structured authoring⁴, single sourcing, and collaborative development processes) are focused on decreasing the time and costs of translation and localization projects and improving the quality of multilingual information products. These technologies and methods provide sets of global technical communication (TC) metrics. For example, the tool metrics can include “number of words and terms stored in translation memory, number of source and target languages, and accuracy of source-to-target term matches;” the process metrics can include “word count reduction, development time improvements, and amount of content re-use” (“Metrics for translation,” n.d., para. 2).

Although the global TC metrics abound, they do not necessarily reflect the quality of multilingual information products, because multilingual quality metrics are a lot more difficult to capture. Improving the quality of multilingual information products is one of the key arguments for CCM, yet little empirical

research—research that relies on concrete evidence—exists on multilingual quality in CCM contexts. What happens with multilingual quality when it needs to be achieved and evaluated in CCM environments?

In this article, I aim to address this gap and report on the comparative analysis of two surveys that focus on how CCM impacts multilingual quality beliefs and practices. The first survey was conducted via TC venues (Batova, 2015a & 2015b) and the second via technical translation venues. Based on the analysis of the survey results, I argue for constructing quality as a metric for global TC in CCM environments. Such metric recognizes the multiple sources of multilingual quality pain points and includes questions that global TC project teams can use to create collaborative, contextualized approached to quality.

Background Information

Defining, evaluating, and measuring information quality, even in one language, is a difficult process that is fraught with disagreement (for discussions of approaches to achieving and measuring quality see, for example, Beaupre, 2010; Braster, 2007; Carey et al., 2014; Carliner, 1997; Markel & Wilson, 2009; Schriver, 1993; Smart, Seawright, & Detienne, 1995; Smith, 1996; Spilka, 2000; Vitas, 2013; E. Weiss, 2002; Wilde, Corbin, Jenkins, & Rouiller, 2006). With multilingual information products, the disagreements quickly multiply: Opinions about defining and characterizing multilingual quality come from TC and technical translation as fields of research and practice, as well as academic translation studies. Over the years, technical translation and translation studies publications have discussed the following theoretic and practical issues:

- Linguistic equivalence or staying true to the source text versus being target-oriented (e.g., Eubanks, 1998; Hallman, 1990; Hammond, 1995; T. Weiss, 1995)
- Causes and levels of translation errors (e.g., Brunette, 2000; Drugan, 2013; Lauscher, 2000; Pym, 1992)
- Translators' liability for quality (e.g., Ansaldi, 1999; Byrne, 2007; Stejskal, 2006)
- Usability as a multilingual quality parameter (e.g., Byrne, 2010)
- Multiple possible variants of quality and translation as a process rather than a product (e.g., ASTM

1 A translation memory (TM) is a database of previously translated segments of text (e.g., sentences, phrases, paragraphs); in this database, source and target segments of text are separated from their visual presentation and are matched together. New texts are compared to the database to identify identical and similar segments. Such segments can then be reused.

2 Component content management (CCM) is a set of technologies and methodologies that allows working with texts as granular, structured, reusable snippets rather than complete documents.

3 A topic is a unit of information that has a title and content and that is short enough to be specific to a single subject (Hackos & IBM, 2006).

4 Structured authoring “is a publishing workflow that lets you define and enforce consistent organization of information in documents, whether printed or online” (O’Keefe, 2009, p. 2).

Lost in Content Management

International, 2006; Lomme & Melby, 2015; Standardization, 2006)

- Agile development paradigm (Atkin, 2017; Kaptein, 2017; Lukavský & Cormican, 2017; Ressin, Abdelnour-Nocera, & Smith, 2011; Zamborsky, Savola, & Ruane, 2017)

TC—where publications about multilingual quality typically more often come from industry than academic authors—has a few questions of its own. One question, for example, dwells on outlining the strategies that differ for achieving and measuring of monolingual versus multilingual quality (Carey et al., 2014; Hoft, 1995). Another question focuses on the problems of organizational silos and collaboration. For example, Swisher (2014) notes that it is very common to have “the renegade translation activity that takes place across a company” and for stakeholders to have “no idea that other groups are creating content that is being translated” (231–232). Silos—“disparate groups of people in the same company, groups that often work on the same content with no knowledge of each other’s activity” (591–593)—are often to blame. Examples of organizational silos for global TC include technical documentation versus marketing versus technical support versus localization teams. The need to break the silos and to include translators into content development process is not a new idea, and “some companies have figured out that content creators and content translators should at least know each other’s email addresses” (Swisher, 2014, pp. 595–596). Yet, Swisher (2014) notes that “in general, content creators usually have painfully little interaction with localization and translation teams” (pp. 598–599).

One issue of multilingual quality that is present in both translation and TC publications is the need to consider the culture-defined informational needs, expectations, and preferences of global users—to think about the role of localization, transcreation, and translation in quality assurance. These three processes (translation, localization, and transcreation) differ by their place on the continuum of cultural adaptation:

- **Translation.** The term refers to producing an information product in a target language equivalent to the information product in the source language that communicates the same message and meaning as the source (“Translation, localization, and globalization,” n.d.). Arguably, a translation always

has some element of localization (e.g., changing metric measurements to U.S. customary units). However, translation is different from localization in that the goal of translation is to “compose a text only once in a way that will serve as many audiences as possible and then to translate that one piece of writing into multiple languages” (Batova & Clark, 2015, p. 223).

- **Localization.** The term in its original sense describes adapting information to the cultural, rhetorical, educational, ethical, legal, and other characteristics of readers and the global, national, and local contexts in which they interact with texts and products (Bailie & Ledet, 2005; Batova, 2014; Byrne, 2010; Hoft, 1995; McCool, 2006; Melton, 2008). Localization can result in radically different information products in source and target languages (Batova & Clark, 2015). A word of caution: People often mean different things when they say localization. In fact, the term localization is often used as a synonym for translation when describing the industry that works on creating multilingual information products. Another common meaning refers to creating locale-specific versions of software and UI products (Carey et al., 2014; Cowan, 2010; Hackos, 2006; Ishida, 2002; Saldanha, 2009).
- **Transcreation.** The term describes the process where authors who are native speakers of their languages produce new information products in these languages based on the message and the cultural and legal specifics of the target locale (Batova, 2015b). It is different from localization in that it doesn’t start with a source text but rather with a creative brief, and its goal is to produce a desired outcome rather than a desired information product, even if this outcome involves completely different media (Kelly, 2013).

Adapting texts to the needs of global users and their respective cultures is an effective way to achieve multilingual quality. Adaptation helps overcome product resistance (Hoft, 1995), saves money by decreasing the need for user support (McCool, 2006), and increases sales and customer satisfaction (Bailie & Ledet, 2005). Yet, adaptation-based approaches like localization and transcreation are also costly and complex. They require experience and careful consideration of the ROI.

As this discussion illustrates, the task of defining what it means to create high-quality multilingual information products can often seem daunting. Yet, the goal of global TC is to create information products that are usable in both source and target languages, so each organization needs to determine how to achieve and evaluate multilingual quality in conjunction with translation cost savings that are usually the goal of CCM (Batova, 2014; “Metrics for translation,” n.d.).

CCM methodologies, particularly topic-based writing, structured authoring, and single-sourcing, and CCM technologies champion cost-savings and quality improvement and have gained widespread adoption. They are particularly important to account for when we talk about multilingual quality: They take the idea of reuse in translation to a different level, challenging the translation industry’s quality practices. When reusing content with a TM, translators still review complete target-language information products to ensure that reused translated segments fit within new contexts and that reuse coupled with linguistic idiosyncrasies (e.g., pronouns that are gender-dependent, adjective inflections) did not make the target information products problematic. CCM allows working with content at a granular level during source content development, so that technical communicators can track all changed and new source components and only send these out to language providers, who then, in turn, typically use a TM to complete the project. Providing background, batching, and giving read-only access to a CCM database to translators alleviates the problem of translating out of context to some degree; yet, translators still don’t know all possible contexts of use for the content they are translating. After technical communicators receive these newly translated components from the language providers, they assemble complete target information products, which become a combination of newly translated content components and components already in the multilingual CCM database. Translators rarely see these assembled information products.

As a result, in academic and industry literature in both TC and technical translation, the topic of multilingual quality in CCM environments is characterized by contradictions. Benefits are very substantial. Some of these benefits include

- Increased consistency (Freeman, 2006; Hackos, 2012; Rockley & Cooper, 2012; Samuels, 2011; Schengili-Roberts, 2008)
- Automation, structure, efficient storage and retrieval of data, and eliminating human error (Hysell, 2001; Ruyle, 2001; Swisher, 2014)
- Additional quality control (Mescan, 2011; Schengili-Roberts, 2008; Trotter, 2004)
- Localization affordances (Hart-Davidson, 2009)

Still, several factors present challenges for multilingual quality⁵:

- Lack of context, text segmentation, problems with training and human resources (Bailie, 2009; Broin, 2008; Byrne, 2013; Hackos, 2008; Severson, 2008; Swisher, 2011; Yeo, 2010)
- Neglecting cross-cultural reading comprehension principles (Gattis, 2008)
- Favoring translation over localization and transcreation (Batova & Clark, 2015; Clark, 2007),
- Handling the linguistic idiosyncrasies of particular languages (Batova & Clark, 2015; Hackos, 2008; Yeo, 2010)
- Problematic implications for “cooperation, and job satisfaction” (Pym, 2008)
- Conceptual controversy with terminology (Batova, 2015a)
- Lack of attention to strategies for adjusting multilingual quality practices to CCM environments (Batova, 2018)

In addition, some challenges that are typical for CCM implementations in general have impacts on translation and localization as well: inadequate analysis and planning (e.g., Abel, 2013; Andersen, 2014b; Berg, 2007; Dayton & Hopper, 2010; Kostur, 2004; Rockley, 2001; SDL, 2009; Shumate, 2011; Trotter, 2007); lack of organizational readiness and a change management plan (e.g., Bailie, 2009; Gollner, Andersen, Gollner, & Webster, 2015; Hackos, 2011; Robitaille, 2005; Rockley & Cooper, 2012; Shumate, 2011); and problems with buy-in during implementation (e.g., Andersen, 2008, 2014a; Bailie, 2013; Coggio, 2015; Gollner et al., 2015; Hamer, 2007; Robitaille, 2005b; Rockley & Cooper, 2012).

5 For an extended literature review of multilingual quality in CCM environments in TC and technical translation publications refer to (Batova, 2014).

Lost in Content Management

These publications that touch on the question of multilingual quality, particularly in CCM environments, served as the background for designing the two surveys that I report on in this article. In the next section, I describe the methodology for the project: how I approached designing the surveys and analyzing the data I collected.

Method

The approach for studying multilingual quality practices in CCM environments consisted of two surveys. The first survey was conducted via TC venues and was supported and distributed by the Center for Information Development-Management (CIDM) via emails and in the organization's LinkedIn group; I also distributed the survey through other TC and information management LinkedIn groups (e.g., Technical Writer Forum, Content Strategy). The second survey was conducted via technical translation venues and was distributed via emails by the American Translators' Association (SciTech division) and in translation LinkedIn groups (e.g., ProZ; L10N; MATI; LocWorld). Both surveys received IRB approval from the Arizona State University.

The initial questions for the surveys were created based on a review of academic and trade publications in TC and technical translation and the results of a qualitative case study in an organization that transitioned to CCM to produce information products in English for the U.S., Spanish for Mexico and Latin America, and Simplified Chinese (Batova, 2018). In addition, my 14 years of experience in localization industry (having worked as a translator, language specialist, localization project manager, and global TC strategy consultant) also influenced the survey design. The questions in both surveys were divided into four categories:

- Demographic data (e.g., industry, roles, types of products and organizations, languages, experience)
- Work practices (e.g., translation/localization approaches and technologies and CCM approaches and technologies)
- Multilingual quality definitions, approaches, metrics
- Impacts of CCM on multilingual quality

While the thematic categories of questions remained the same in both surveys, some terminology in the surveys had to be adjusted to reflect usage differences in individual fields. In addition, several questions differed between the two surveys, as they were field specific (see Tables 1 and 2 for the complete list of survey questions). To create both surveys, I used the online survey format and Qualtrics engine because it provided advanced survey logic capabilities that allowed asking individual participants only questions that related to their specific experiences based on their previous answers.

To ensure that I had a comprehensive list of questions for both surveys and to fine-tune question wordings, terminology, and survey logic, I solicited extensive feedback. The survey distributed via TC venues was vetted by the academic and industry members of the CIDM's Industry/Academy Collaborative Research Initiative. The survey distributed via technical translation venues was vetted and pilot-tested by two expert translation and localization professionals who worked as translators, reviewers, and localization project managers. Grouping questions, selecting wording and terminology reflective of individual fields, and using advanced survey logic helped increase survey completion and decrease participant fatigue.

Results and Discussion

Summary of the Survey Results

Survey 1

The survey distributed via TC venues helped collect data from 185 participants; all participants were working in CCM environments. However, the analysis focused on 98 participants who completed the survey and self-reported as being experienced with translation and/or localization. These 98 participants represented a strong cross-section of organizational sizes and industries. Most participants played multiple roles within their companies and produced a wide range of information products. Table 1 presents the responses to the survey by question.

The analysis of the responses to the survey distributed via TC venues revealed the following findings:

Table 1. Questions and responses to the survey distributed via TC venues

Questions	Responses
Demographic Data	
Which of the following industries best characterizes your company or product? (select all that apply)	enterprise software (54), consumer software (19), consumer hardware (15), semiconductors (3), enterprise hardware (18), medical devices (14), pharmaceuticals (1), industrial/heavy machinery (16), consumer electronics (9), consumer software/gaming (5), telecommunications (12), computer services (9), other (please specify) (9)
Which of the following best describes the company you work for?	small business (1-249 employees) (15), medium-sized business (250-499 employees) (3), large business (500-999 employees) (8), enterprise (>1000 employees) (72), other (please specify) (0)
What languages do you speak?	27 respondents indicated speaking more than 1 language (each respondent selected the specific languages they speak)
How long has your organization or your team been using topic-based authoring and component content management approaches?	less than 1 year (9) 1-5 years (50) 6-10 years (21) more than 10 years (18)
Which of the following best describes your role in your organization?	writer (13), information architect (11), editor (2), publisher (1), manager (24), IT support staff (0), customer service representative (0), marketing specialist (0), content strategist (5), content engineer (1), media specialist (0), business analyst (1), graphic designer/illustrator (0), instructional designer (0), translation/localization manager (1), I have multiple roles in my organization (please list up to three roles that you take on the most) (39), other (please specify) (0)
What types of information products do you participate in developing? (select all that apply)	user manuals (98), training materials (36), embedded user assistance (help systems) (74), information apps (6), videos (45), magazines (0), books (5), newsletters (13), brochures (13), white papers (23), fact sheets (14), press releases (5), use cases (16), technical data sheets (37), release notes (50), other (please specify) (24)
Work Practices	
What business practices does your organization or your team employ to produce information products in multiple languages?	We have in-house language specialists (10) Representatives of our organization at specific locations create them (6) We outsource to freelance translators (6) We outsource to translation and localization agencies (54) Representatives of our organization at specific locations outsource to freelance translators (1) Representatives of our organization at specific locations outsource to translation and localization agencies (4) We use different practices for different languages (please specify) (7) We use different practices for different information products (please specify) (3) I don't know (2) Other (please specify) (5)
What linguistic practices does your organization or your team employ to produce information products in multiple languages? (select all that apply)	We translate (convert content into foreign languages) by hiring human translators without any technology (23) We translate (convert content into foreign languages) by hiring human translators and leveraging human effort with Computer Assisted Translation software ("translation memory") (69) We translate (convert content into foreign languages) with the help of machine translation (8) We translate (convert content into foreign languages) with the help of machine translation (MT) and hire human post-MT editors (16) We localize (adapt information products to make them more meaningful, appropriate, and effective for a particular culture, locale, or market) (26) We transcreate (authors who are speakers of foreign languages produce new texts in these languages based on the message of the source text, their technical expertise, and their cultural and legal knowledge of the target locale) (6) Other (please specify) (1)
Which of the following best describes the topic-based authoring and component content management approaches of your organization or your team? (select all that apply)	developing discrete topics that answer a single question and can be used in multiple deliverables (71) developing reusable content at the component level (e.g., hazard statements) (47) developing reusable content at the fragment level (e.g., conrefs in DITA) (57) cutting and pasting (11) other (please specify) (7)

Lost in Content Management

Questions	Responses
Quality Definitions, Approaches, Metrics	
Do you believe that it is appropriate to localize information products?	No, information products must be the same in every language (6) Yes, information products need to be adapted based on local cultures and practices (70) It depends on the information product (please specify) (22)
How does your organization or your team ensure the quality of your information products in target languages? (select all that apply)	We ensure the quality of the source content (64) We promote communication between all stakeholders who participate in creating information products in all languages (35) We provide training in content strategy, including new processes, methodologies, and technologies (23) We invest in processes and technologies that ensure quality of target content and information products (41) We ensure the accuracy and adequacy of technical, marketing, and legal details (32) We make use of strategies and technologies that help ensure consistency of foreign language projects (34) We adjust our practices based on the evaluation of changing goals and resources (22) We hire cultural consultants (2) We hire qualified language providers (34) We have a style guide for our language providers (21) We analyze our audiences in different locales and focus on user-centered design (7) We analyze information products of our competitors abroad (8) We conduct usability-testing of our information products abroad (15) Our information architecture accounts for differences in information needs and preferences of customers in different locales (10) We proofread and edit our target content (topics or other content elements) (23) We review complete information products in target languages (23) I don't know (8) Other (please specify) (14)
How do you measure the quality of information products in target languages? (select all that apply)	Number, type, and complexity of support calls abroad that are related to the quality of technical publications (16) Number of complaints regarding the technical publications by customers abroad (31) Number of typing mistakes and spelling and grammar errors in a new unit of content in a target language (8) Customer satisfaction measured through surveys (17) Readability, ease of navigation, relevance, technical accuracy, cultural appropriateness (13) Comparison with competitor's information products in the same language (2) Comparison with information products of locally-based competitors (2) My organization or my team developed our own benchmarks for measuring the quality of global information products (please describe) (4) We do not measure the quality of information products in foreign languages (19) You cannot objectively and usefully measure the quality of global information products: All quantifiable characteristics do not relate to improving customer satisfaction, decreasing costs of doing business, or increasing sales in a foreign market (2) I don't know (19) Other (please specify) (12)
Are there ever any complaints about the quality of information products of your company in target languages?	Yes (48) No (20) I don't know (30)
How do you get data related to customer complaints about information products in different locales?	Open ended question: answers coded for patterns and themes
What do customers complain about?	Open ended question: answers coded for patterns and themes
How often do you hear about such complaints?	Open ended question: answers coded for patterns and themes
How do you address these complaints?	Open ended question: answers coded for patterns and themes
What helps you avoid complaints?	Open ended question: answers coded for patterns and themes

Questions	Responses
What aspects of your quality practices for translation/localization projects would you like to keep/what aspects would you like to change and why?	Open ended question: answers coded for patterns and themes
CCM and Multilingual Quality	
How do topic-based authoring and component content management approaches in your organization or your team influence the practices of producing information products in target languages? (select all that apply)	They have positive impacts (72) They have negative impacts (18) I don't know (10) Other (please specify) (12)
What advantages do topic-based authoring and component content management approaches have for creating information products in target languages? (select all that apply)	They help us select which content to send to language providers (35) They help us reuse content in target languages (52) They make information products in a target language more consistent (e.g., help with version control, help to keep information consistent for different information products within one language) (54) They help with format and information consistency between source and target languages (51) They improve our processes (e.g., eliminate human errors, help with managing translation and localization projects) (39) They help avoid desktop publishing costs (39) They give us more control over content (e.g., make it easier to switch language providers) (23) They give better opportunities for adapting information products to cultural information expectations of audiences in different countries (e.g., different information models for different locales/languages) (12) Other (please specify) (2)
What downsides do topic-based authoring and component content management approaches have for creating information products in target languages? (select all that apply)	They make it easy not to provide language specialists and translators with the necessary context (5) They make it harder to choose localization over translation, since keeping information consistent between languages is so easy (4) They make it harder to find language specialists who are experts in our industry and are familiar with topic-based authoring environment (6) They require additional considerations when we work with highly inflected languages (8) Other (please specify) (6)

1. *There are apparent contradictions in the beliefs and practices of multilingual quality as it relates to cultural adaptation.*

Ninety-four percent of participants believed that information products need to be adapted for the culture-defined needs and expectations of global users, at least for specific types of technical information products. At the same time, only 35% of those who believed in adaptation practiced such adaptation (through localization and transcreation). This gap between beliefs and practices of cultural adaptation can have multiple reasons behind it, but its existence is an indication of the need to study, analyze, and improve approaches to multilingual quality in TC.

In evaluating this finding, I was particularly careful to avoid biases and false interpretations. First, to make sure that the understanding of terminology didn't

impact the answers of the participants, I provided definitions of the terms *localization* and *transcreation* in the wordings of the respective questions and the answer options. Second, I considered possible correlation between industry and adaptation beliefs and practices that could explain the difference based on regulations, liability, and market-defined competition in specific industries and found no significant direct correlation (see Figure 1). Third, I reviewed the possibility that people who believe in adaptation could be more likely to complete the survey about multilingual quality and so sway the survey results to show the overwhelming belief in adaptation. However, this possible sampling bias does not explain the gap between the beliefs and practices of multilingual quality.

2. *TC professionals perceive more positive than negative impacts of CCM on multilingual quality.*

Lost in Content Management

Seventy-three percent of participants noted that CCM has positive impacts on multilingual quality and 18% reported negative impacts.

Of those who reported positive impacts (72 participants), in a multiple-choice question, 75% praised consistency within a language, 71% consistency across languages, 72% reuse opportunities in target languages, 54% process improvement and savings related to desktop publishing, 49% the opportunity to only send select content to language providers, and 32% control over content. While some of these categories overlap, their overall focus is on consistency and reuse. Comparatively, among the negative impacts, the top categories were problems with highly-inflected languages and finding language specialists who are

experts in a specific industry and are familiar with CCM authoring environments.

3. *CCM environments can privilege specific elements of multilingual quality definitions above others.*

When asked about advantages and disadvantages of CCM for multilingual quality, 52% of survey participants mentioned consistency across languages as one of the top advantages of CCM. Only 16% mentioned localization: 4% stated that CCM makes it harder to decide to adapt and 12% noted that CCM provides better opportunities for adaptation. All these participants were among those who believed in adapting information products based on culture-defined needs of users.

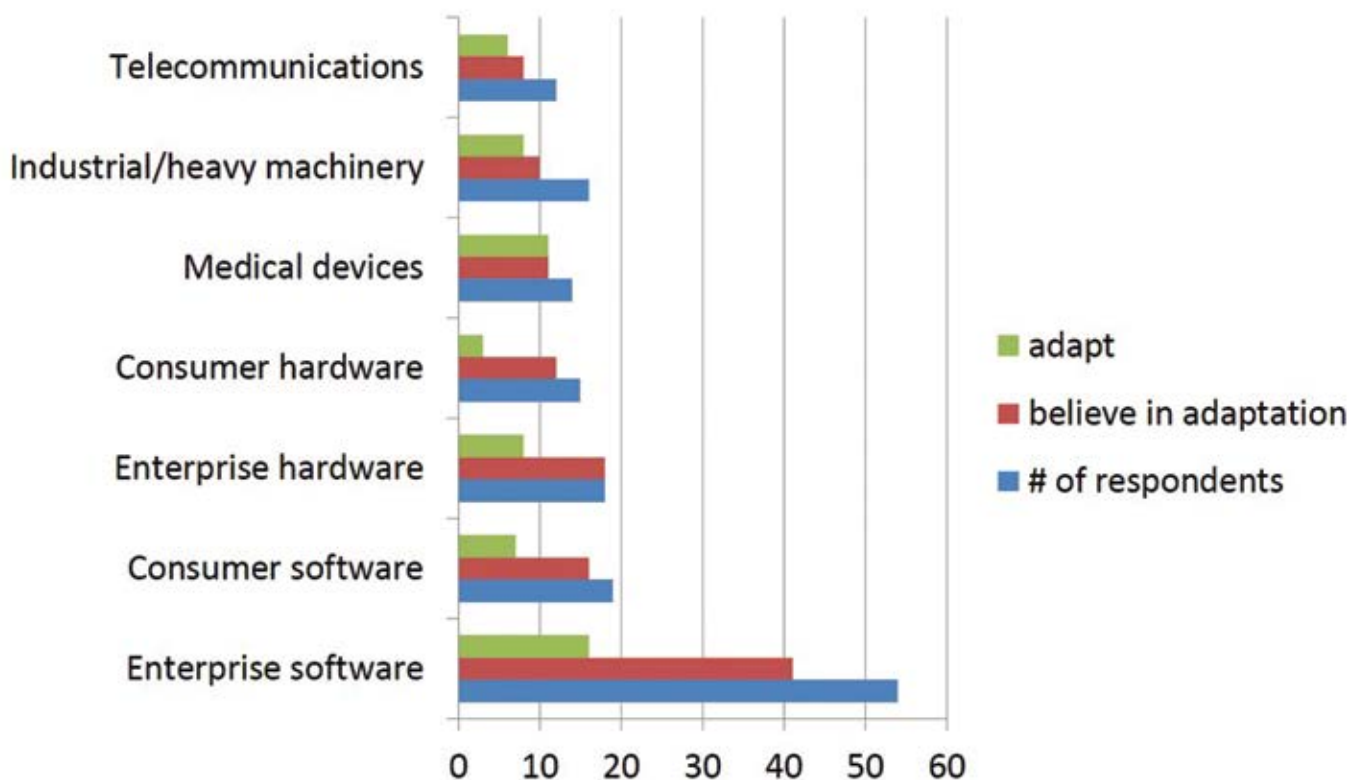


Figure 1. Localization beliefs and practices for top seven industries by the number of survey participants. In all industries but medical devices, there is a larger number of participants who believe in adaptation than those who actually adapt. In each industry, there is a large overlap in the participants who believe in adaptation but do not adapt for various reasons. There seems to be a correlation between how highly regulated the field is (medical devices and telecommunications being very highly regulated and industrial/heavy machinery being relatively highly regulated), yet the data is insufficient to make this possible correlation more conclusive. Additional data from very highly regulated industries like motor vehicle manufacturing and petroleum and coal products manufacturing could help make this correlation more conclusive.

This result has important implications. First, relatively few participants mentioned localization when it comes to the benefits of CCM despite believing in the benefits of adaptation. Whatever the reasons behind this self-reporting, it indicates that only few participants considered the opportunities CCM holds for adapting texts, as well as possible challenges of CCM to multilingual quality as related to adaptation.

Second, some participants saw format and information consistency between source and target languages as one benefit of CCM. Such consistency across languages⁶ can often be beneficial, yet we must be careful when focusing on consistency alone: keeping information products largely the same across languages is the opposite of adaptation.

4. *Strategies for assuring and measuring multilingual quality need more wide-spread adoption.*

Thirty-nine percent of participants either didn't know about or did not measure multilingual quality. Comparatively, 42% measured multilingual quality through user feedback (with a large overlap between these three categories, the top three categories were "Number, type, and complexity of support calls abroad that are related to the quality of technical publications," "Number of complaints regarding the technical publications by customers abroad," and "Customer satisfaction measured through surveys").

Top categories for achieving multilingual quality were ensuring the quality of the source content (65%), investing in processes and technologies that ensure quality of target content and information products (42%), promoting communication between all stakeholders who participate in creating information products in all languages (36%), using strategies and technologies that help ensure consistency of foreign language projects (35%), and hiring qualified language providers (35%).

5. *User complaints can often be attributed to insufficient adaptation.*

When asked about user satisfaction with multilingual quality measured through user complaints, 49% of the participants stated that they received user complaints, from several times every month to several

times a year. The number of complaints was related to the length and frequency of the production cycles. It is worth noting that 31% of survey participants didn't know if they received user complaints and only 15% of participants reported in the open-ended question actively soliciting feedback from multilingual users. This result is in line with what we know about the problems technical communicators experience with acquiring user information (Virtaluo, 2014).

Those who received and had access to user complaints were asked to name characteristics of these user complaints in an open-ended question. The thematic pattern coding of the answers revealed that many complaints can be attributed to the lack of or insufficient adaptation (e.g., "text inappropriate for a specific region," "language style and fluency," "unnatural sounding text," "no 'tuning' to local users," "confusing text," and "low findability").

6. *Successful strategies for multilingual quality in CCM environments combine knowledge of the localization industry practices, effective use of technology, effective communication with multilingual quality stakeholders, and access to users.*

There were only two respondents who reported lack of complaints and who, at the same time, reported soliciting user feedback. The small number of participants in this group is very significant as it shows the urgency of developing strategies for achieving multilingual quality in CCM environments—and, of course, for getting access to user data.

Yet, the responses of the two participants in this small group provided some initial insights about their strategies for success with multilingual quality, because, in a specific set of questions, their responses were virtually identical. The two participants had over ten years of experience with translation and localization and spoke at least two languages. They believed in and practiced adaptation. They reported saving time by leveraging multilingual content with TM and a CCM software and investing this time into quality practices. They often re-evaluated their goals and resources and discussed how to adjust their quality approaches with their colleagues, and they provided individual contracts for each translation and localization project with specific requirements for each project. This group self-reported working with sales personnel in the respective countries, having good working relationships with

6 Versus consistency within a language where information is consistent over a range of genres that relate to a product series or product versions in one language.

Lost in Content Management

translation vendors, valuing quality of source material, and usability testing complete information products in target languages.

Survey 2

The survey distributed via technical translation venues included 144 participants. However, the analysis focused on 58 participants who answered all the survey questions and self-reported as working with microtranslation projects—projects that involve translating components of content rather than complete information products⁷. These 58 participants represented a strong cross-section of industries and translation business types and a variety of professional roles and types of information products created. Table 2 presents the responses to the survey by question.

The analysis of the responses to the survey distributed via technical translation venues revealed the following findings:

1. *Beliefs and practices of multilingual quality as it relates to cultural adaptation hold potential.*

Eighty-six percent of participants stated that they believed in the importance of cultural adaptation, depending on the types of technical information products. Out of those, 88% reported practicing cultural adaptation through localization and transcreation. This correlation of believing in and practicing adaptation could mean excellent news for global TC.

Yet, it is important to consider possible biases that could have influenced such a response. First, the reason could be the selection bias—people who are more interested in the topic are more likely to take part in the survey and, thus, a sizable percentage of participants would report believing in and practicing adaptation. Second, the belief versus behavior bias and the recall bias might have influenced the results. In other words, it is hard to remember and correctly evaluate events from the past if one is solely relying on one's own recollection of these events. Third, the image management bias could have impacted the results as well. Saying that you believe in something but do not

follow through on your beliefs can cause cognitive dissonance, and it is common for us humans to try and avoid this state.

2. *CCM challenges the quality practices of the translation and localization industry despite overall level of experience and experience working with content components.*

The survey participants reported an overall high level of experience in translation and localization industry and a substantial experience with content components: 67% of participants had ten years or more of experience in the translation and localization industry, and only 9% had less than one year of experience with translating content components. At the same time, only 22% reported feeling comfortable or very comfortable working with content components rather than complete information products; 32% reported the same in the group with 10+ years of experience with both translation and CCM (see Figure 2). The top reason for discomfort in the open-ended follow-up question was named as the lack of context.

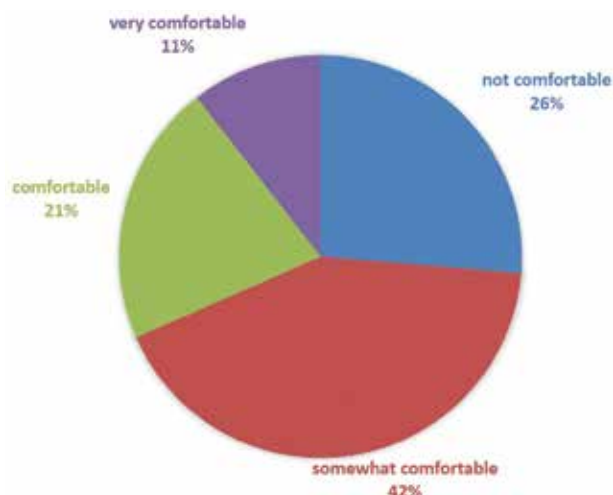


Figure 2. Comfort level with content components in technical translation participants with 10+ years of experience in the translation industry and 10+ years of experience with CCM-environments. While the overall level of comfort working with content components was not high among all of the technical translation survey participants (22%), it is interesting to see that in the participant group with the highest level of experience (10+ years) with both CCM-environments and in the translation and localization industry, only 32% were comfortable with content components, which is only 10% above the average for all the participants.

⁷ Even though two expert translation and localization professionals advised me to use the term “microtranslation” in the survey, I explained this term to avoid possible terminology confusion. Informed consent and the initial inclusion-exclusion question provided explanations of the term “microtranslation” and placed it in the CCM context.

Table 2: Questions and Responses to the Survey Distributed via Technical Translation Venues

Questions	Responses
Demographic Data	
How many years have you worked for the technical translation and localization industry?	less than 1 year (1) 1-5 years (12) 6-10 years (6) more than 10 years (39)
Which of the following best describes your business? (select all that apply)	I work for an organization in-house (11) I am a freelancer and I work for translation agencies (4) I am a freelancer and I work for clients directly (25) I am a freelancer and I have different practices for different projects (26) other (please specify) (4)
Which of the following best characterizes the businesses you work for? (select all that apply)	enterprise software (18), consumer software (16), telecommunications hardware/software/systems (19), semiconductors (11), enterprise hardware (11), medical devices (21), pharmaceuticals (19), industrial/heavy machinery (26), consumer electronics (21), consumer software/gaming (11), computer services (17), other (please specify) (21)
What types of texts do you work with? (select all that apply)	user manuals (50), training materials (43), embedded user assistance (help systems) (19), information apps (18), videos (10), magazines (11), books (9), newsletters (25), brochures (41), white papers (18), fact sheets (28), press releases (32), use cases (12), technical data sheets (39), release notes (13), I don't know (please explain) (1), other (please specify) (13)
Which of the following best describes your role? (select all that apply)	technical translator (47), localization engineer (4), transcreation expert (8), reviewer (20), QA expert (10), translation/localization project manager (9), other (please specify) (4)
How long have you been working with microtranslation projects?	less than 1 year (5) 1-5 years (26) 6-10 years (8) more than 10 years (19)
On a scale from 1 to 4, how comfortable are you with microtranslation projects when compared to working with whole documents?	1 (not comfortable) (19) 2 (somewhat comfortable) (26) 3 (comfortable) (9) 4 (very comfortable) (4)
What makes you comfortable or uncomfortable?	Open ended question: answers coded for patterns and themes
Work Practices	
What type of tasks do you usually perform? (select all that apply)	I translate without any type of translation technology (23) I translate and use a Computer Assisted Translation software (41) I do post-machine translation editing (15) I localize (adapt technical texts to make them more meaningful, appropriate, and effective for a particular culture, locale, or market) (32) I transcreate (produce new texts in these languages based on the message of the source text and my cultural and legal knowledge of the target locale) (16) Other (please specify) (5)
Quality Definitions, Approaches, Metrics	
Do you believe that it is necessary to adapt technical texts?	No, technical texts must be the same in every language (7) Yes, technical texts need to respond to local cultures, marketplace demands, and legal specifics (36) It depends on the technical text (please specify) (14) Other (specify) (1)

Lost in Content Management

Questions	Responses
What strategies to ensure quality do you employ? (select all that apply)	I have a degree/certificate in translation/localization (26) I only work into my native language (36) I do research for each project (51) I stay in touch with the target languages and cultures (38) I communicate with technical writers who wrote the text in the source language and ask them questions (25) I follow project specifications (43) I know who potential audiences for the text I'm working on are (32) I always have another translator review my projects (20) I follow a style guide (29) I attend translation/localization conferences and seminars as part of continued education (20) I use a terminology database (40) I use a translation memory (43) I comply with industry quality standards (ASTM, ISO, EN, CEN, DIN) (20) I use a quality assurance check tool (33) I don't know (0) Other (please specify) (6)
In your opinion, what parameters show that a target text is of high quality?	Open ended question: answers coded for patterns and themes
Are there ever any complaints about the quality of projects you worked on?	Yes (13) No (34) I don't know (11)
What are these complaints about?	Open ended question: answers coded for patterns and themes
How often do you hear about such complaints?	Open ended question: answers coded for patterns and themes
How do you address these complaints?	Open ended question: answers coded for patterns and themes
What helps you avoid complaints?	Open ended question: answers coded for patterns and themes
What aspects of your quality practices would you like to keep/ what aspects would you like to change and why?	Open ended question: answers coded for patterns and themes
CCM and Multilingual Quality	
How does the shift to microtranslation approach impact the quality of technical texts in target languages? (select all that apply)	Microtranslation projects have negative impacts (36) Microtranslation projects have positive impacts (4) I don't know (10) Other (please specify) (8)
What are the positive impacts of microtranslation on quality? (select all that apply)	Consistency between different documents in my target language(s) (3) Consistency for the same document in my target language and the source language (2) Improved processes (e.g., fewer human errors, help with managing translation/localization projects) (2) Better opportunities for adapting technical texts to cultural information expectations of audiences in different countries (4) I don't know (0) Other (please specify) (0)
What are the negative impacts of microtranslation on quality? (select all that apply)	I don't get enough context to work with granular content (32) There are fewer localization and transcreation projects (2) I cannot spend much time on researching each individual project (19) There is no training on how to work with granular content (8) I don't get to review whole documents (27) I don't know (0) Other (please specify) (19)

This finding reveals the dire need to include translators in discussing multilingual quality, so that their opinions and concerns are taken into account. Working with content components out of context is difficult at best, and it cannot be automatically assumed that technical translators will know how to do this on the spot and on their own. Although only 14% complained about the lack of training, training can be one avenue of communicating about challenges of working with content components when organizations transition to CCM, whether translators are in-house employees or contractors. Such communication can promote preserving the dedicated teams of translators who are familiar with the product lines of specific organizations during transition to CCM.

3. *Technical translators perceive the impacts of CCM on multilingual quality as largely negative.*

Compared to the TC survey, the participants of the technical translation survey were skeptical about the advantages of CCM for multilingual quality. Sixty-two percent of participants noted that CCM has negative impacts on multilingual quality and 7% reported positive impacts.

Of those who reported negative impacts (36 participants), in a multiple-choice question, 89% complained about the lack of context, 75% about not reviewing whole documents, 53% about not having time to research each individual project, 22% about no availability of training that would focus on content components, and 6% about fewer localizations. Comparatively, among the positive impacts, better opportunities for adaptation and consistency between different documents in the target language were the two top categories.

4. *There is a need to collaboratively re-think strategies for assuring and measuring multilingual quality.*

The question about measuring quality was refocused to ask about understanding quality and was switched to an open-ended format: the question needed to involve both freelance and in-house language specialists, as well as employees of translation agencies, and freelancers don't typically get access to measurements. This rephrasing had certain methodological disadvantages (e.g., inconsistent phrasing can lead to difficulties with categorizing responses) but proved to uncover important insights.

The pattern analysis of the open-ended answers revealed the following themes: consistency, correct terminology, the combination of style/tone/grammar, and cultural appropriateness. These themes, yet again, point at the interweaving of consistency and cultural adaptation as multilingual quality parameters—this time without multiple-choice prompts.

The top strategies for assuring quality included doing research for each project (88%), following project specifications (74%), using a translation memory (74%), and using a terminology database (69%). While the last three answer options mirror industry best practices, the first one deserves more attention. Fifty-three percent of participants who complained about negative impacts of CCM on multilingual quality reported not having time to research each individual project, yet 88% of participants overall cited such research as an important multilingual quality strategy. These numbers indicate a conflict between best practices and changes in quality practices in CCM contexts.

5. *Language providers who receive complaints about multilingual quality attribute them to the shift in translation processes.*

Twenty-two percent of survey participants reported receiving complaints about quality, while 59% reported no such complaints.

A large percentage of participants not receiving complaints about multilingual quality can be encouraging but can also be a false negative. Getting to know about complaints depends on communication strategies, available resources, and specific processes. For example, TC teams might not be relating complaints to technical translators who are contractors but rather trying to solve them in-house; translation agencies might be referring the problematic projects to a different team of translators to validate/invalidate and correct quality issues.

The pattern analysis of the open-ended question about the reasons for complaints revealed the following themes: time constraints on the microtranslation projects (combined with poor pay rates), little emphasis on research, being a contractor (having to switch between small projects for different clients), lack of instructions/specifications, source text (misunderstanding or poor quality), and lack of an established terminology database.

Lost in Content Management

6. *Technical translators see adaptation, effective communication with technical communicators, and more knowledge of end-users' needs as the basis for creating high-quality multilingual information products.*

Eighty-six percent of translators believed that information products need to be adapted. The thematic pattern analysis of the answers to an open-ended question that asked the participants about their understandings of multilingual quality revealed a strong presence of the adaptation theme as well (e.g., “fluency and clarity,” “flow,” “ease of understanding by target users,” “reads natural in the target language,” “logic and understanding by a different culture,” “impossible to say that it’s a translation,” and “natural style of the target language”).

In the multiple-choice question about the negative impacts of CCM on multilingual quality, more than half of the group who selected negative impacts chose “other” in addition to the options provided in the survey. These open-ended comments emphasized the need to have solid teams with good collaboration strategies and open lines of communication, as well as more knowledge of end users as the prerequisites to creating effective technical information products for the global market. In another open-ended question, more than half of the participants who reported not having complaints about the quality of their work also reported communication with technical communicators and effective collaboration strategies as the main reason.

Constructing Quality as a Global TC Metric

The survey results revealed several aspects of multilingual quality practices in CCM environments that are symptomatic of changes happening at a pace that prevents cross-functional stakeholders from developing collaborative, contextualized approaches to multilingual quality. Activity theory provided a way for a productive intervention: It allowed me to group the contradictions and problems identified by the survey based on their source, formulate the questions global TC project teams can use to create collaborative, contextualized approaches to multilingual quality in CCM contexts, and devise communication strategies for global TC project teams that would lead to appropriate and practical corrective actions.

Activity theory is a multidisciplinary descriptive framework for examining human activity (Engeström,

2000) that is particularly useful for studying human activity when it involves technology (Nardi, 1996). Activity theory strives to provide an understanding of humans and their social entities in their everyday life contexts by focusing on the creation, structure, and processes of their activities—their purposeful interactions with the world (Leontiev, 1978). Activity theory depicts human activity as an activity system that consists of several nodes: subjects, objects, mediating artifacts, community, rules, division of labor, and outcomes. Subjects are the doers of the activity, and they strive to achieve the object—the goal of the activity and the motivation behind it. Subjects and objects interact and influence each other through this interaction (Kaptelinin & Nardi, 2006). Mediating artifacts are cognitive, social, or material means that help subjects strive toward and/or achieve the objects. Subjects belong to a group or an organization that is their community. The community determines how they perform the activity (rules) and how they share their responsibilities in the activity (division of labor). The outcomes of an activity system symbolize the consequences of the activity (Cole & Engeström, 1993; Engeström, 1987, 1993; Yamagata-Lynch, 2010).

If we look at the problems and contradictions identified by the survey through the lens of the activity theory, the *object* of the global TC activity system is efficient creation of high-quality multilingual information products. This object is highly problematic, because the ways it is understood and practiced do not always coincide, particularly when considering cultural adaptation and consistency. Although the quality of individual components can be rather high (and the content of the components can be consistent), it does not equal the quality of the potential information products, as those can depend on the linguistic peculiarities of individual languages and culture-defined informational preferences of local users. In fact, insufficient cultural adaptation is one of the common themes of user complaints. Negative feedback from users can be quite common, yet, in many cases, subjects do not have access to this feedback. In such a way, although it is important to measure time and money spent on creating the object, global TC project teams who work in CCM environments also need to answer the following questions to evaluate multilingual quality:

- How well written and internationalized is the source content?

- How well do users respond to target language information products?
- How well do we know the characteristics and information needs and preferences of these users? How different are these characteristics, needs, and preferences from those of the users in the source language?
- How well do we meet other standards/methodologies/criteria for quality?

The *subjects* of the activity system of global TC are technical communicators, technical translators, and other stakeholders who might not necessarily refer to themselves as belonging to these two categories, but who are involved in creating multilingual information products (e.g., reviewers, information managers, etc.). The subjects mention the importance of effective communication strategies with other subjects and the *community* (other people within their organizations who might be supporting global TC, such as marketing, sales, and engineers) as a strategy for achieving multilingual quality. In such a way, constructing quality as a global TC metric means asking the following questions in global TC project teams:

- Who are the multilingual quality stakeholders and their community (irrespective of their job titles and contractual relations to the company)?
- How do these stakeholders relate to one another?
- What part of the content lifecycle do they participate in? What are their roles and responsibilities?
- Are they participating in the multilingual quality discussion? What are their pain points in multilingual quality processes?

The *mediating artifacts* of the global TC activity system are the technologies and approaches to writing, including topic-based authoring, structured writing, single-sourcing, CCM systems, TMs, and content components as specific genres of writing. CCM technologies and methodologies as mediating artifacts create multiple pain points. Technical translators perceive the impacts of CCM on multilingual quality as largely negative, while technical communicators as largely positive. CCM environments can privilege specific elements of multilingual quality definitions above others, e.g., consistency above cultural adaptation. In order to take advantage of the CCM

technologies and methodologies and counteract the challenges, global TC project teams need to ask the following questions:

- What global TC technologies (e.g., CCM, TM, DTP software) and methodologies (e.g., topic-based authoring, structured writing, minimalism) do stakeholders and community use? Are our tools configured properly to support localization? Who owns the TMs? What pain points are related to these technologies and methodologies?
- How can we encourage the multilingual quality stakeholders and community to share their opinions about these technologies and methodologies? How can we encourage them to investigate more beneficial or suitable technological solutions or adapt existing technologies to better fit our needs and goals?
- How do we best educate multilingual quality stakeholders and community about CCM technologies and methodologies, as well as global TC approaches (translation, localization, transcreation)?

The changes in *rules* and *division of labor* in the global TC activity system challenge the quality practices of the translation and localization industry despite overall level of experience and experience working with content components of the language providers. Language providers who receive complaints about multilingual quality attribute them to the shift in their processes after transition to microtranslations. Working with components without the knowledge of the potentiality of these components (i.e., all potential contexts where these components might be used) and the inability to follow best practices that include researching each individual project lead to the decrease in multilingual quality. TC stakeholders reported quality of the source text as the main multilingual quality assurance strategy, with other strategies being reported by considerably fewer stakeholders. In such a way, while the strategies of the language providers require collaborative rethinking, the strategies of TC stakeholders require a more wide-spread adoption.

In addition, no stakeholders from TC or translation and localization industry reported being in decision-making roles about the choice of translation, localization, or transcreation as the global TC strategy. Very few of these stakeholders had direct access to

Lost in Content Management

users, yet many of them reported the knowledge of the users as one of the foremost strategies for achieving multilingual quality.

While both groups emphasized the importance of communication with one another, the multilingual quality issues in CCM environments did not seem to be resolved based on current communication strategies. One explanation could be that language providers are typically contractors and perceive bringing up the issue of not feeling comfortable with content components to people who provide work for them as risky, because they can come across as incompetent.

To evaluate the practices and processes of multilingual quality, the following questions can be useful for global TC project teams:

- What are our market priorities, globally? What is our company's globalization strategy? Who decides on the global TC strategy and how do they make these decisions? What is our budget for global TC?
- What are the current practices for the stakeholders and community of global TC (e.g., terminology management, controlled language authoring, topic-based writing, microtranslations)? What are the pain points in these practices, if any? How can we find out more about these pain points?
- How do current multilingual quality practices contribute to the success of our technical information products?

A word of caution: It is important to think of the questions above as a starting point for negotiating multilingual quality as a CCM metric; these questions need to be adapted based on the specifics of teams, available resources, and expertise.

Conclusions

Metrics are the signals that show whether something is working, so using metrics is key to tracking changes, both positive and negative, over time. In TC, metrics are “critical to running a successful documentation team and negotiating for improvements,” because they help to “demonstrate that promises were met,” “validate or correct assumptions,” “alert the team to irregularities,” and “track progress toward a goal” (Stevens, 2017, pp. 101–102). The impacts of CCM on global TC need to be measured to evaluate how CCM re-shapes the

practices and fulfills on the promise of reducing time and cost, while improving quality.

Typically, the metrics that are collected for global TC in CCM environments are content components sent for translation, cost of translation, and time for translation. These metrics compare the cost of translating content across channels before CCM and the cost of change with reduction in words translated due to reuse and minimalism, reduction in time required for translation, reduction of content sent for translation because existing translation is reused from CCMS, and reduction or elimination of digital publishing costs (Lewis, 2012; Rockley, 2013). I argue that multilingual quality needs to be included as one of multilingual CCM metrics: Not only do users make purchasing decisions and product and brand recommendations based on technical information products (Melville, 2014), international businesses need to meet “ethical standards of utility, rights, justice, and care” (Lipus, 2006, p. 76) by providing users with high-quality information products (Lipus, 2006; Markel, 2001).

It is paramount to adjust the approaches to measuring quality to CCM contexts (as compared to whole-document multilingual practices), because CCM reshapes the practices of the translation and localization industry. So, how do we construct quality as a global TC metric in CCM environments? First, metrics need to align with the larger goals, or else they can lead to “unwanted side effects and skewed numbers that result in unrealistic expectations” (Stevens, 2017, p. 101). Quality metrics are, traditionally, the measurements used in ensuring customers receive acceptable products; they need to directly translate user needs into acceptable measurements. While the goals of measuring quality are connected to user satisfaction, broadly defined, measurements need to reflect the fact that “creating global products seems to come in stages, starting with simple translations and basic internationalization, then thinking about cultural differences, and finally working toward a deeper understanding of people in different places” (Quesenbery, 2011, p. 16).

Second, metrics should reflect the collaborative nature of global TC, in which high-quality information products reflect success or failure of the entire project team. Identifying multilingual quality stakeholders and designing effective communication strategies with them is a large part of achieving quality.

Third, “what you should measure is almost always a subset of what you can easily measure combined with a little bit of what you can’t” (Stevens, 2017, p. 102). For CCM environments, constructing quality as a global TC metric includes measuring not just savings of time and resources but also the reaction to the information products by global users and the collaborative process of creating these products.

Limitations and Future Research

It is worth noting that the participants of both surveys were not randomly selected but rather volunteered. It is impossible to say if their views were impacted in any way by their interest in the topic of the survey and, as a result, if their answers would be representative of the entire fields of TC and technical translation and localization. I mitigated this limitation by making the surveys available through multiple venues on LinkedIn in addition to professional listservs. As a result, the survey participants came from a strong cross-section of industries, organizational sizes, and workplace roles. However, in the future, the analysis based on the results of the two surveys would benefit from a larger number of participants and random sampling. It could also be extended to include more source languages. In addition, it is important to target professionals who might not be accessing TC or technical translation forums or organizations (because they do not refer to themselves as belonging to these groups, e.g., in-country reviewers who are SMEs) but who are nonetheless multilingual quality stakeholders.

Another possible limitation of the study is inherent to survey methodology. Surveys typically rely on self-reporting, so biases such as belief versus behavior, honesty/image management, and introspective ability need to be carefully considered during interpretation. In addition, changes in precise wordings of the questions, the order of questions, the understanding of questions by individual survey participants can also impact the responses. To counteract such biases, I relied on experts in the fields of TC and technical translation to vet the survey; I also explained to the participants in the informed consent that their answers are anonymous. Although these measures were aimed at eliminating survey biases, they do not provide a 100% guarantee.

The results may be limited by specific industries represented in the survey. In the future, it would be useful to compare current results with more participants

from highly regulated industries, such as petroleum product manufacturing, motor vehicle manufacturing, or financial services. Such industries might have differing approaches for global TC strategies prescribed by regulations (see Figure 1).

Both TC and localization are fast-changing industries, with practices and approaches continuously developing, technologies evolving, and new books and articles being published. Since the time I conducted the surveys, for example, *The Language of Localization* (Brown-Hoekstra, 2017) appeared, which is an excellent source for consistent and uniform definitions. Such publications are paramount for improving how we construct and negotiate multilingual quality in CCM environments, because not only can terminology and practices be uncertain and fluid, change itself is often variable, faster or slower in some locations, industries, and organizations than in others.

Implications of the Study

This study has important implications for TC theory, education, and practice.

For TC theory, the study helps to better conceptualize the impacts of CCM on global TC, where content components as texts help examine “the ways in which texts act in the development and mediation of knowledge in a variety of settings” (Rude, 2015, p. 369).

For TC education, it forecasts skill sets required for TC graduates who strive to have sustainable careers in global TC environments mediated by CCM methodologies and technologies. It also emphasizes the focus on users and the global context of use in TC education regardless of the class: Even in classes focused on CCM technologies, it is important to prepare students to think of global contexts of their work, the impacts of technologies on work practices, and the importance of safe-guarding the emphasis on users, because in the increasingly intertwined world economics, success for technical communicators will be “a matter of usability—creating products and services that are easy to use in a range of cultural environments. Achieving this objective will require technical communicators to approach user experience design according to the contexts of use found in different cultures” (St.Amant, 2017, p. 123).

In addition, this study shows the necessity of teaching students how to be job crafters (Batova, 2018): people who make “the physical and cognitive changes

Lost in Content Management

[...] in the task or relational boundaries of their work” (Wrzesniewski & Dutton, 2001, p. 179) to “move from a ‘one-size-fits-all’ job description to an individualized enactment of the job” (Wrzesniewski, LoBuglio, Dutton, & Berg, 2012, p. 287). In such a way, students can learn to align their internal goals with business goals in their work contexts (Berg, Dutton, & Wrzesniewski, 2007), which leads to better job satisfaction.

For TC practice, the results of the study provide strategies for more effective and efficient decision-making in global TC project teams, better language and pathways for collaboration between technical communicators and technical translators, and additional arguments for including translators at every stage of information development and management processes.

With significant implications for TC theory, education, and practice, the results of this study also create an important link between academic research and industry practice. This study took exigence in the field (Andersen et al., 2013; Benavente, Rude, Hart-Davidson, & Andersen, 2013), built upon previous research, and, as such, contributed to creating a coherent body of TC knowledge that informs and is informed by practice (Rude, 2015; Spilka, 1993).

References

- Andersen, R., Benavente, S., Clark, D., Hart-Davidson, B., Rude, C., & Hackos, J. (2013). Open research questions for academics and industry professionals: Results of a survey. *Communication Design Quarterly*, 1(4), 42–49.
- Ansaldo, M. (1999). Translation and the law: Observations of a law professor/translator. *Language International*, (February), 12–17.
- ASTM International. ASTM F2575: Standard Guide for Quality Assurance in Translation (2006). <http://doi.org/10.1520/F2575-06>. Copyright
- Atkin, S. (2017). Translation in a continuous delivery DevOps world. Retrieved from <https://www.gala-global.org/ondemand/translation-continuous-delivery-devops-world>
- Bailie, R. A. (2009). The impact of content convergence on localization. Retrieved from <http://intentionaldesign.ca/2009/01/11/the-impact-of-content-convergence-on-localization/>
- Bailie, R., & Ledet, D. (2005). Following the road untraveled: from source language to translation to localization. In *Proceedings of the International Professional Communication Conference, 2005 IEEE International* (pp. 32–39).
- Batova, T. (2014). Component content management and quality of information products for global audiences: An integrative literature review. *IEEE Transactions on Professional Communication*, 57, 325–339.
- Batova, T. (2015a). Component content management in multiple languages: A conceptual controversy. In *Proceedings of the International Professional Communication Conference* (pp. 202–205).
- Batova, T. (2015b). Multilingual quality and topic-based authoring: A survey of common practices. Retrieved from <http://www.infomanagementcenter.com/enewsletter/2015/201501/second.htm>
- Batova, T. (2018). “Negotiating Multilingual Quality in Component Content Management Environments: A Case Study.” *IEEE Transactions on Professional Communication* 61 (1), 77–100.
- Batova, T., & Clark, D. (2015). The complexities of globalized content management. *Journal of Business and Technical Communication*, 29, 221–235.
- Beaupre, J. (2010). Industry trend: Quality at the source (Understanding how an Information Quality Strategy is essential in today’s business world). *Center for Information Development Management, Best Practices Newsletter, October 10*. Retrieved from <http://infomanagementcenter.com/members/newsletter/Output/2010/10-October/10032010.php>
- Benavente, S., Rude, C. D., Hart-Davidson, W., & Andersen, R. (2013). Results of the April 2013 Technical Communication Industry Research Needs Survey. Retrieved from <http://informationmanagementcenter.com/enewsletter/2013/201305/third.htm>
- Berg, J., Dutton, J., & Wrzesniewski, A. (2007). What is job crafting and why does it matter? [Theory-to-practice briefing]. *University of Michigan, Ross School of Business*, 1–8.
- Braster, B. (2007). Simplified technical English — Quality assurance and standardization for technical documentation, and many other benefits in the field of content management and translations. *Center for Information Development Management, Best Practices Newsletter, October 10*.
- Broin, U. (2008). DITA: The Obama of global content? Retrieved from <http://www.multilingualblog.com/dita-the-obama-of-global-content/>

- Brown-Hoekstra, K. (2017). *The language of localization*. Laguna Hills, CA: XML Press.
- Brunette, L. (2000). Towards a terminology for translation quality assesment: A comparision of TQA practices. *The Translator*, 6(2), 169–182.
- Byrne, J. (2007). Caveat translator: Understanding the legal consequences of errors in professional translation. *The Journal of Specialised Translation*, 7, 2–24.
- Byrne, J. (2010). *Technical translation: Usability strategies for translating technical documentation*. Netherlands: Springer.
- Byrne, J. (2013). Of tomatoes, translators and the importance of context. Retrieved from <http://www.jodybyrne.com/category/blog>
- Carey, M., McFadden Lanyi, M., Longo, D., Radzinsk, E., Rouiller, S., & Wilde, E. (2014). *Developing quality technical information: A handbook for writers and editors* (3rd ed.). Indianapolis, IN: IBM Press.
- Carliner, S. (1997). Demonstrating effectiveness and value: A process for evaluating technical communication products and services. *Technical Communication*, 44(3), 252–265.
- Clark, D. (2007). Content management and the production of genres. In *ACM International Conference on Design of Communication Proceedings* (pp. 9–13). New York, NY: ACM Press.
- Cole, M., & Engeström, Y. (1993). A cultural–historical approach to distributed cognition. In G. Salomon (Ed.), *Distributed Cognitions: Psychological and Educational Considerations (Learning in Doing: Social, Cognitive and Computational Perspectives)* (pp. 1–46). Cambridge, UK: Cambridge University Press.
- Common Sense Advisory. (2014). Can't read, won't buy. Retrieved from <http://www.tcworld.info/news/article/article/cant-read-wont-buy/>
- Cowan, C. (2010). XML and localization. In *XML in technical communication* (2nd ed., pp. 123–134). Croydon, UK: ISTC.
- Drugan, J. (2013). *Quality in Professional Translation: Assessment and Improvement*. London, UK: Bloomsbury Academic.
- Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Helsinki, FI: Orienta-Konsultit.
- Engeström, Y. (1993). Developmental studies of work as a testbench of activity theory: The case of primary care medical practice. In S. Chaiklin & J. Lave (Eds.), *Understanding practice: Perspectives on activity and context* (pp. 64–103). Cambridge, UK: Cambridge University Press.
- Engeström, Y. (2000). Activity theory as a framework for analyzing and redesigning work. *Ergonomics*, 43(7), 960–974.
- Eubanks, P. (1998). Genre and technical translation: Social, textual, and educational exigence. *Journal of Business and Technical Communication*, 12(1), 50–70. <http://doi.org/10.1177/1050651998012001003>
- Freeman, B. (2006). Multilingual publishing with a content management system. *Intercom*, May, 14–15.
- Gattis, L. F. (2008). Applying cohesion and contrastive rhetoric research to content management practices. In G. Pullman & B. Gu (Eds.), *Content management: Bridging the gap between theory and practice* (pp. 201–216). Amityville, NY: Baywood.
- Hackos, J. (2006). *Information development: Managing your documentation projects, portfolio, and people* (2nd ed.). Indianapolis, IN: Wiley Publishing.
- Hackos, J. (2008). Best practice for indexing DITA topics for translation. Retrieved from <https://www.oasis-open.org/committees/download.php/27581/IndexingBestPracticesWhitePaper.pdf>
- Hackos, J. (2012). Using information architecture to effect business success. *Intercom*, 59(1), 10–13.
- Hackos, J., & IBM. (2006). What is topic-based authoring?
- Hallman, M. (1990). Differentiating technical translation from technical writing. *Technical Communication*, 37(3), 244–247.
- Hammond, M. (1995). A new wind of quality from Europe: Implications of the court case. In *Translation and the law* (pp. 233–246). Philadelphia, PA: John Benjamins.
- Hart-Davidson, W. (2009). Content management: Beyond single-sourcing. In R. Spilka (Ed.), *Digital literacy for technical communication: 21st Century theory and practice* (pp. 128–144). New York, NY: Routledge Publishing.
- Hoft, N. (1995). *International technical communication: How to export information about high technology*. New York, NY: John Wiley & Sons.
- Hysell, D. (2001). Single sourcing for translations. In *ACM International Conference on Computer Documentation Proceedings* (pp. 89–94). New York, NY: ACM Press.

Lost in Content Management

- Ishida, R. (2002). Localizable DTD design. *Multilingual*, July/August.
- Kaptein, Y. (2017). Embrace the scrum: An agile way of translating. Retrieved from <https://www.gala-global.org/ondemand/embrace-scrum-agile-way-translating>
- Kaptelinin, V., & Nardi, B. A. (2006). *Acting with technology: Activity theory and interaction design*. Cambridge, MA: MIT Press.
- Kelly, N. (2013). How mature are we, really, when it comes to language? Retrieved from https://www.atanet.org/chronicle/feature_article_april2013.php
- Lauscher, S. (2000). Translation quality assessment: Where can theory and practice meet? *The Translator*, 6(2), 149–168.
- Leontiev, A. (1978). *Activity, consciousness, and personality*. Englewood Cliffs, NJ: Prentice Hall.
- Lewis, M. (2012). *DITA metrics 101: The business case for XML and intelligent content*. Schomburg, CA: Rockley Publishing.
- Lipus, T. (2006). International consumer protection: Writing adequate instructions. *Journal of Technical Writing and Communication*, 36(1), 75–91.
- Lomme, A., & Melby, A. (2015). *Assessing translation quality with multidimensional quality metrics (MQM)*. Retrieved from www.tranquality.info
- Lukavský, I., & Cormican, I. (2017). Localizing Microsoft Office: Supply chain implications of continuous localization models. Retrieved from <https://www.gala-global.org/ondemand/localizing-microsoft-office-supply-chain-implications-continuous-localization-models>
- Markel, M. (2001). *Ethics in technical communication: A critique and synthesis. ATTW Contemporary Studies in Technical Communication*. Westport, CT: Ablex Publishing.
- Markel, M., & Wilson, K. S. (2009). Design and document quality: Effects of emphasizing design principles in the technical communication course. *Technical Communication Quarterly*, 5(3), 271–294. http://doi.org/10.1207/s15427625tcq0503_2
- McCool, M. (2006). Information architecture: Intercultural human factors. *Technical Communication*, 53(2), 167–183.
- Melton, J. (2008). Lost in translation: Professional communication competencies in global training contexts. *IEEE Transactions on Professional Communication*, 51, 198–214.
- Melville, C. (2014). A business case for technical communication – facts & figures. Retrieved from <http://www.tcworld.info/rss/article/a-business-case-for-technical-communication-facts-figures/>
- Mescan, S. (2011). Is your content a valuable corporate asset or a costly liability? Retrieved from <http://www.infomanagementcenter.com/enewsletter/2011/201104/third.htm>
- Metrics for translation. (n.d.). Retrieved from <http://www.tcbok.org/wiki/metrics-for-translation/>
- Nardi, B. (1996). *Context and consciousness: activity theory and human-computer interaction*. Cambridge, MA: MIT Press.
- O’Keefe, S. (2009). Structured authoring and XML. Retrieved from <http://www.scriptorium.com/structure.pdf>
- Pym, A. (1992). Translation error analysis and the interface with language teaching. In C. Dollerup & A. Loddegard (Eds.), *The teaching of translation* (pp. 279–288). Amsterdam: John Benjamins.
- Pym, A. (2008). “Professional corpora”: Teaching strategies for work with online documentation, translation memories, and content management. *Chinese Translators Journal*, 41–45.
- Quesenberry, W. (2011). *Global UX: Design and Research in a Connected World*. Waltham, MA: Morgan Kaufmann/Elsveir.
- Ressin, M., Abdelnour-Nocera, J., & Smith, A. (2011). Lost in agility? Approaching software localization in agile software development. In *International Conference on Agile Software Development* (pp. 320–321).
- Rockley, A. (2013). Measuring metrics for a component content management system. Retrieved from <https://vimeo.com/105870015>
- Rockley, A., & Cooper, C. (2012). *Managing enterprise content: A unified content strategy* (2nd ed.). Indianapolis, IN: New Riders.
- Rude, C. D. (2015). Building identity and community through research. *Journal of Technical Writing and Communication*, 45(4), 366–380.
- Ruyle, K. (2001). Meet me in RIO: Implementing reusable information objects. In *Society For Technical Communication Conference Proceedings*.
- Saldanha, G. (2009). *Routledge Encyclopedia of Translation Studies*. New York, NY: Routledge.
- Samuels, J. (2011). How you know you should have bought a content management system last year. *Intercom*, 58(7), 13–14.

- Schengili-Roberts, K. (2008). Light at the end of the tunnel: Proven ROI by using a DITA-based content management system. Retrieved from <https://www.infomanagementcenter.com/publications/best-practices-newsletter/2008-best-practices-newsletter/light-at-the-end-of-the-tunnel-proven-roi-by-using-a-dita-based-content-management-system/>
- Schrivver, K. (1993). Quality in document design: Issues and controversies. *Technical Communication*, 40(2), 239–257.
- Severson, E. (2008). Best practices for DITA in a global economy working with DITA: The globalization manager's point of view. Retrieved from <http://www.infomanagementcenter.com/enewsletter/200812/second.htm>
- Smart, K. L., Seawright, K. K., & Detienne, K. B. (1995). Defining quality in technical communication: A holistic approach. *Technical Communication*, 42(3), 474–481.
- Smith, K. (1996). What is quality? *Intercom*, March, 42–43.
- Spilka, R. (1993). Influencing workplace practice: A challenge for professional writing specialists in academia. In *In writing in the workplace: New research oerspectives* (pp. 207–219). Carbondale, IL: Southern Illinois University Press.
- Spilka, R. (2000). The issue of quality in professional documentation: How can academia make more of a difference? *Technical Communication Quarterly*, 9(2), 207–220.
- St.Amant, K. (2017). Of scripts and prototypes: A two-part approach to user experience design for international contexts. *Technical Communication*, 64(2), 113–125.
- Standardization, E. C. for. EN 15038: European quality standard for translation service oroviders (2006).
- Stejskal, J. (2006). Quality assessment in translation. *ATA Chronicle*, 12–16.
- Stevens, D. (2017). You get what you measure. *Center for Information Development Management, Best Practices Newsletter*, 19(5), 101–123.
- Swisher, V. (2011). The problem with translating DITA. Retrieved from <http://www.contentrules.com/blog/the-problem-with-translating-dita/>
- Swisher, V. (2014). *Global content strategy: A primer*. Laguna Hills, CA: XML Press.
- Translation, localization, and globalization. (n.d.). Retrieved from <https://www.tcbok.org/wiki/translation-localization-and-globalization/>
- Trotter, P. (2004). Single source content management. Retrieved from <https://www.infomanagementcenter.com/publications/best-practices-newsletter/2004-best-practices-newsletter/single-source-content-management/>
- Virtuoto, J. (2014). “Death of the technical communicator”—Current issues and future visions for our field. *Technical Communication*, 61(1), 38–47.
- Vitas, B. (2013). Community-driven information quality standards: How IBM developed and implemented standards for information quality. *Technical Communication*, 60(4), 307–315.
- Weiss, E. (2002). The metaphysics of information quality: Comments on producing quality technical information. *ACM Journal of Computer Documentation*, 26(3), 141–147.
- Weiss, T. (1995). Translation in a borderless world. *Technical Communication Quarterly*, 4(4), 407–425. <http://doi.org/10.1080/10572259509364610>
- Wilde, E., Corbin, M., Jenkins, J., & Rouiller, S. (2006). Defining a quality system: Nine characteristics of quality and the editing for quality process. *Technical Communication*, 53(4), 439–446.
- Wrzesniewski, A., & Dutton, J. E. (2001). Crafting a job: Revisioning employees as active crafters of their work. *The Academy of Management Review*, 26(2), 179–201.
- Wrzesniewski, A., LoBuglio, N., Dutton, J. E., & Berg, J. M. (2012). Job crafting and cultivating positive meaning and identity in work. In A. Bakker (Ed.), *Advances in positive organizational psychology*. London, UK: Emerald.
- Yamagata-Lynch, L. (2010). *Activity systems analysis methods: Understanding complex learning environments*. Netherlands: Springer.
- Yeo, S.-L. (2010). Successful localization in DITA. *Center for Information Development Management, Best Practices Newsletter*, October. Retrieved from <https://www.infomanagementcenter.com/publications/best-practices-newsletter/2010-best-practices-newsletter/successful-localization-in-dita/>
- Zamborsky, S., Savola, P., & Ruane, D. (2017). Continuous delivery in localization—Achievable reality? Retrieved from <https://www.gala-global.org/ondemand/continuous-delivery-localization—achievable-reality>

Lost in Content Management

About the Author

Tatiana Batova is an Assistant Professor and a Senior Sustainability Scholar at Arizona State University, where she teaches technical communication and user experience. Her research interests include global technical and healthcare communication, user experience, content strategy, and sustainability. She has worked as an information developer, translator, localization project management, and multilingual consultant in healthcare and pharmaceutical fields. Contact information: tbatova@asu.edu.

Manuscript received 18 August 2017, revised 22 December 2017; accepted 2 March 2018.

Workplace Democracy and the Problem of Equality

By Jared S. Colton, Avery C. Edenfield, and Steve Holmes

Abstract

Purpose: Professional communicators are becoming more invested in unique configurations of power in organizations, including non-hierarchical and democratic workplaces. While organizations dedicated to democratic processes may enact power differently than conventional organizations, they may fall short of practicing equality. This article explains the differences in non-hierarchical workplaces, considers businesses where democracy is a goal, and argues for considering equality as a habitual practice, particularly when writing regulatory documents.

Method: We conduct a review of the literature on non-hierarchical workplaces and organizational democracy, applying Jacques Rancière's concept of equality to two examples (one using primary data collection and one using secondary data) of two cooperatives where organizational democracy is integral to the design of the business.

Results: The literature review exposes an interest in *métis* (cunning, craftiness, flexibility) as vital to practitioner success in non-hierarchical workplaces; however, this article demonstrates that *métis* does not prevent inequality, even in organizations expressly committed to workplace democracy.

Conclusion: Professional communicators need to consider equality not solely as a structural resource (as in rules, laws, policies) but as a habitual practice to cultivate alongside other characteristics and frameworks important to a professional communicator's toolkit.

Keywords: ethics, cooperative, communication, democracy, equality

Practitioner's Takeaway:

- Professional communicators should be paying more attention to non-hierarchical workplaces, in particular, those with democratic aims.
- Democratic workplaces demand the development of certain ethical dispositions/characteristics in professional communicators: *métis* and equality as an ongoing practice.
- While the goals of democratic organizations are often noble, inequalities can still emerge, thus the need to recognize the equality of oneself and others as an ongoing ethical practice rather than something solved solely through institutional mechanisms.
- A heuristic, provided in the closing of this article, prompts professional communicators to examine their practices in terms of equality.

Workplace Democracy

Introduction

Professional communicators are continually becoming more invested in unique configurations of power in organizations. One of the modest aims of this article is to encourage more professional communicators to consider democratic workplaces as valid areas of research and employment. As Kimball (2006) rightly notes, while technical and professional communication (TPC) scholarship is expanding, most research still assumes an institutionalized organization marked by hierarchy and bureaucracy; however, as new technologies have changed the way professional communicators work, scholarship has shifted toward investigating flatter, more autonomous practices in the form of teams, networked organizations, and how companies make use of rhetorics of employee empowerment. Spinuzzi (2007, 2014), Clark (2006), Winsor (2001), and Zachry (2000), for example, have argued that relationships of power and communication go beyond a top-down structure. Thus, even within an apparently rigid bureaucracy, communication and power are more complex than they may first appear (Winsor, 2003). This research has unveiled the many means by which organizations (even ostensibly democratic ones) produce arrangements of power that place one person over another (Clark, 2006; Longo, 2000; Winsor, 1996, 2003). This suggests that while democratic organizations may enact power differently than conventional organizations, they can fall short of actualizing goals of equality.

As we state above, our main goal is to encourage professional communicators to consider non-hierarchical workplaces, in particular, democratic organizations, as legitimate sites of TPC research and practice. Now, not all non-hierarchical organizations aim to be democratic. And while we make this distinction throughout this article, we focus on workplace democracies in particular. *Democracy*, of course, can function as a god-term, or a term that carries high-emotional impact but may be rarely examined. While there are many definitions of democracy in political science and philosophy, we look to the oft-cited Bachrach and Botwinich (1992), who define workplace democracy as employees participating equally “in decision making at all levels in which they work” (p. 163).

In the first half of this article, we argue that workplace democracies require practitioners to cultivate

qualities such as *mêtic* intelligence and an ethical disposition (in the sense of an Aristotelian virtue) committed to equality as an ongoing practice. In the second half, we apply our framework to two examples: one from primary research data and one from secondary data analysis. Through these examples, we show that even workplaces with explicit democratic organizational design can see acts of inequality emerge. We show that the organizational conditions and written policies can enable some employees to practice *mêtis*, making them feel empowered/enabled, but these resources do not necessarily extend to all employees.

Broadly, we argue that professional communicators should remain interested in workplace democracy. Such an investment should not assume that equality inevitably occurs in those spaces, however. For workplace democracy to succeed, it demands an ethic that recognizes equality (and inequality) in everyday practices and habits, not only in organizational design and writing practices, such as dispute resolution documentation or worker councils.

Overview of Non-Hierarchical Workplaces

TPC researchers such as Spinuzzi are beginning to look at communication, project management, and other workplace practices in non-hierarchical and networked workplace configurations (2013, 2015) and non-employee firms (2014). These organizations are sometimes referred to as “horizontal” or “flat,” in contrast to vertical or “top-down” arrangements. This rhetorical framing enables stakeholders to envision themselves as equal partners, even if some organizations are “flatter,” or more democratic, than others.

Despite the movement to understand workplace democracy in discourse and cultural studies for some time now (see Gee, Hull, & Lankshear, 1986), TPC has surprisingly little scholarship on the subject of workplace democracy and the distinctions of non-hierarchical organization. Spinuzzi, however, has taken up Waterman Jr.’s (1990) ideas on adhocracies to include “all-edge adhocracies”—which are highly collaborative, often temporary team-based projects extending beyond the organizational boundaries, or “edges” (Spinuzzi, 2015). TPC scholarship also has shown interest in networking and worker autonomy (Johnson-Eilola, 1996) and extra-institutional practices (Kimball, 2006, 2017). Outside of TPC scholarship, other researchers have

considered innovative workplace structures, such as the holacracy—a copyrighted management system operating by autonomous teams with a central decision maker (Robertson, 2015)—and distributed information-based systems grounded in a knowledge sharing (see, for example, Drucker, 1987; Gee, Hull, & Lankshear, 1986; Skyrme, 2007; Thrift, 2005).

Nevertheless, many people are unfamiliar with, skeptical of, or even resistant to alternative workplace structures (Kastelle, 2013). For example, when Zappos converted to a holacracy and offered a severance package to employees who did not want to remain for the conversion, 29% of their workforce left the company (Reingold, 2016). Distrust of unconventional workplace practices also may be the cause of current resistance to Agile project management strategies (Denning, 2012). The values, practices, and frameworks that are well-suited for conventional, bureaucratic businesses, therefore, may not work in alternative workplaces. The unique characteristics of these structures require commitment to the development of deliberate strategies, habits, and philosophies.

We point to these distinctions, because, while scholars carefully consider arrangements of power in an organization, many of us take the manifestation of hierarchy for granted (Harrison, 1994, p. 249). This is an assumption that Hart and Conklin (2006) rightly critique when they argue for a redefinition of the role of the professional communicator. Their study participants showed “a vision of the profession that is non-hierarchical and highly networked” (p. 412). Nevertheless, as they point out, and as our own personal experiences confirm, hierarchy is often assumed in TPC pedagogy, practice, and research, and scholars from related fields (business administration, communication studies, etc.) have noted that many teach, manage, and evaluate success under the following assumptions:

1. “You need a hierarchy to succeed,”
2. “The people who do the work are of lower status than those who decide what work to do,” and
3. “Organizations that do not follow the norms are likely to fail” (Kastelle, 2013; see, also, Alvesson & Willmott, 2003; Spicer, Alvesson & Kärreman, 2009; Cheney, 1995; Harrison, 1994; Rinehart, 2006).

Though the presupposition of bureaucratic management remains persuasive and fundamental to success for some, non-hierarchical and other democratic

businesses have challenged this assumption and its underlying structuring of power. Scholars, practitioners, and entrepreneurs alike have continued to challenge the requirement of hierarchy by advocating for and instituting alternative forms of organizing work.

In an extensive survey of organizational democracy, Rothschild-Whitt (1979) compared collectivist-democratic organizations to conventional, bureaucratic organizations along eight points: authority, rules, social control, social relations, recruitment and advancement, incentive structures, social stratifications, and differentiations (pp. 511–517). Using these points of comparison, Rothschild-Whitt created a metric for evaluating organizational democracy. While Rothschild-Whitt’s categories are almost four decades old, we still find value in them as her study is one of the few comprehensive studies of its kind. She categorized such different workplaces as falling along the following scale:

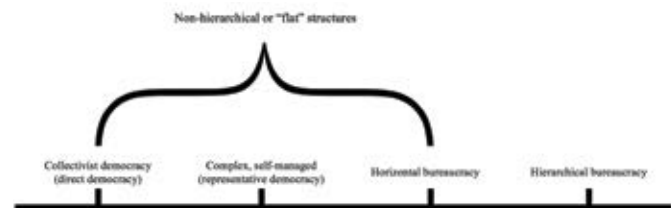


Figure 1. Scale of Organizational Democracy (Adapted from Rothschild-Whitt, 1979, p. 525)

According to Rothschild-Whitt’s (1979) scale (see Figure 1), non-hierarchical organizations can fall anywhere along the first three categories but would not include the last (hierarchical arrangements). In this article, then, when we say “non-hierarchical,” we refer to any type of arrangement within these three categories. Importantly, the scale shows that horizontalism, or non-hierarchy, does not equate with democratic commitments. In other words, it is important not to conflate non-hierarchy with workplace democracy. For instance, adhocracies (Waterman Jr., 1993; Spinuzzi, 2015) and holacracies (Robertson, 2015) are flat and non-hierarchical but not democratic, in the sense that they are not rooted in democratic goals. Organizations may try non-hierarchical arrangements not because of ideological commitments to democracy; instead, they may see these arrangements as pragmatic to their goals of increased productivity or employee buy-in (Craig & Pencavel, 1995; Kato, Poutsma, & Ligthart, 2017; Valve, 2012; Zwick, 2004).

Workplace Democracy

What distinguishes a *democratic workplace* is not just its methods but its end goals of highly participatory employee engagement, more equally distributed compensation, and/or more employee control of the workplace (Bernstein, 1982; Brodwin, 2013; Cheney, 1995; Harrison, 1994), which we discuss further below.

Some well-known companies have experimented with or otherwise adopted non-hierarchical workplaces or ownership models, including the Associated Press, Land O' Lakes, Organic Valley, Recreational Equipment Inc. (REI), tens of thousands of credit unions, and democratically run businesses, such as Patagonia, Github, Valve, WordPress, and 37Signals. Understandably, some readers may question the economic practicality of democratic workplaces, because most of us are just not used to talking about them. Nevertheless, the viability of such organizations has been well documented (see, for example, Brodwin, 2013; Craig & Pencavel, 1995). While establishing the viability of these organizations is beyond the scope of this article, we do hope that the short list above shows the growing need to investigate the non-hierarchical workplaces in which professional communicators might find themselves. This list should also demonstrate the need to continually reevaluate how we understand concepts such as democracy and equality.

Democratic Workplaces

While any organization can employ elements of democracy, not all non-hierarchical structures are necessarily committed to workplace democracy as an end unto itself. Bernstein (1982) offered one metric to measure democracy in those workplaces explicitly committed to democratic ideals. This metric has been used to evaluate development strategies (Cheney, 1995) still being used in cooperatives today (see cultivate.coop; ica.coop; Mondragon Cooperative Corporation; nasco.coop; University of Wisconsin Center for Cooperatives) and is often cited in cooperative theory (Cheney, Santa Cruz, Peredo, & Nazareno, 2014; May, Cheney, & Roper, 2007; Williams, 2007). Bernstein's (1982) original metric defines workplace democracy along the following points:

1. "The *degree* of control workers enjoy over any particular decision,"
2. "The *issues* over which that control is exercised," and
3. "The organizational *level* at which their control is exercised" (p. 53; Cheney, 1995; see, also, Kaswan, 2013; Kato, Poutsma, & Ligthart, 2017).

This metric demonstrates the most fundamental aim of workplace democracy: participation (Cheney, 1995). As evidence, Bernstein describes participation as occurring along a continuum (1982, p. 57). The most minimal form of worker participation is the "suggestion box," in part "[b]ecause it lacks face-to-face communication and frequently does not include even a response by management" (Bernstein, 1982, p. 57). Bernstein names worker councils or assemblies as best meeting the above metric, when workers exert full control over the organization and managerial decisions (1982, p. 58). Isthmus Engineering and Manufacturing (Billeaux, Reynolds, Young-Hyman, & Zayim, 2011) and Co-op Cab (discussed below) are examples of such democratic control. Employee participation rather than ownership is the fundamental component of democratization because "firms which are entirely worker-owned" can still "lack any degree of democratization" (Bernstein, 1982, pp. 76–77), as in the case of employee stock option plans.

In looking at organizations that are not top-down, we must not conflate the differences among alternative organizations. Flatter, or horizontal, businesses have fewer levels of management and may distribute knowledge and decision making more equally than conventional businesses. That is, employees or teams of employees may act autonomously, but the organization may include centralized decision makers (Drucker, 1987; Robertson, 2015; Waterman Jr., 1993). In contrast, an intentionally democratic business "involves management that is less autocratic and confers more power on individual employees" (Rayasam, 2008, para. 3). A workplace based on an ideal of democracy may include voting systems, debates, town hall-style forums, or branch autonomy (Rayasam, 2008).

One Type of Democratic Workplace: The Cooperative

Historically, workplace democracy in the US has two important threads: African-American collectivism and the late 60s–70s counterculture. African-American communities have engaged in collectivism since the Antebellum era as a way to meet their economic and political needs (Gordon Nembhard, 2014). Communalism and collectivism arising from 60s–70s anti-authoritarianism brought about communal ownership and living arrangements, such as land trusts, housing cooperatives, and communes (Rothschild-Whitt,

1979). The contemporary cooperative in the US owes its existence in part to these movements. At its most bare definition, a cooperative is a business that is owned by the people who use it (Gordon Nembhard, 2014, p. 2) and that could fall under any of the categories in Rothschild-Whitt's (1979) scale of organizational democracy (see Figure 1), even hierarchical, depending upon its degree of democratic commitments.

There are three types of cooperatives: consumer, producer, and employee (Gordon Nembhard, 2014, p. 3). First, in consumer cooperatives, people pool their resources to meet needs not supplied elsewhere or that are too costly for individuals (p. 3). One example of a consumer cooperative is neighbors in a food desert opening a grocery store to provide healthy, affordable food options. The consumer cooperative may be the most common and may feel to some shareholders (consumers) to be the least democratic. Commonly, the consumer would purchase a membership (a "share") and then exert control through electing their Board of Directors or through other avenues provided by the cooperative. A second type is the producer cooperative, formed as a business that jointly purchases supplies or jointly processes and markets goods and materials, for example, agricultural cooperatives (Gordon Nembhard, 2014, p. 3). Finally, employee cooperatives are formed so employees can "own and manage a business themselves," in order "to stabilize employment, make policy, and share the profits" (Gordon Nembhard, 2014, p. 3). Though conditions may vary, of these three types of cooperatives, an employee cooperative most closely fits the definition of a democratic workplace, because the employees have influence over how the business is managed.

To this point, we have now designated the kind of workplace most likely to engage in democratic practices—a workplace committed to aims of employee democracy. We have taken the time to make this distinction in order to better prepare professional communicators who might find themselves working in any organization that lays claims to non-hierarchy or democratic practices. Looking at these kinds of organizations is important, because of TPC's sometimes over-emphasis on hierarchy and bureaucracy, especially as professional communicators are more likely than ever to find themselves working in some type of non-hierarchical workplace (Hart & Conklin, 2006; Johnson-Eilola, 1996).

It is important to recognize that even those organizations committed to workplace democracy may at times struggle to practice equal participation. "Non-hierarchy" and "democracy" can sound sexy to professional communicators looking to find meaningful employment, but that does not mean they won't find themselves in an organization that falls short of its democratic goals. In other words, just because an organization has structural resources (policies, rules) dedicated to democratic practices does not mean that its employees automatically know how to practice equality, something much easier said than done, and something not easy to define. This is the larger point of this article: that unless professional communicators have developed certain ethical dispositions, they will struggle or meet resistance when working in non-hierarchical organizations, in particular, workplace democracies. In the sections below, we further explicate this exigence, advocate for examples of such ethical dispositions, and then apply them to two examples.

The Exigence for Dispositions of *Mêtic* Intelligence and Equality

We use the term *disposition* here in reference to Aristotle's virtue ethics (2004). Broadly conceived, traditional definitions of ethics are defined as "the study of values and proper conduct" (Markel, 2000, p. 21). Consistent with this definition, but more specific, Aristotle described ethics as centered around the term *hexis*, which can be translated as habit, comportment, characteristic, or disposition. This focus on dispositions, rather than fixed moral principles, is a result of his belief—and that of many contemporary virtue ethicists since (see, for example, Vallor, 2016)—that ethics are messy, always context-specific, and cannot be pinned down in any absolute sense. Nevertheless, this criticism of fixed principles does not preclude agreement on certain ethical dispositions. Some of Aristotle's examples of virtuous dispositions include patience, truthfulness, and generosity. As a brief example, while two parties might disagree on what a disposition of patience looks like in some exact sense, usually they will agree that patience is a moral characteristic, or disposition, that is good for one to inhabit, for one to cultivate and develop.

One example of the kind of dispositions needed for success in non-hierarchical spaces, and which has received attention lately in TPC scholarship

Workplace Democracy

(Pope-Ruark, 2014; Wilson & Wolford, 2017), is “*mêtic* intelligence.” *Mêtis* (cunning, craftiness) is a term used by ancient Greek rhetoricians referring to the cultivation of a flexible form of creativity that could be used across particular or unexpected circumstances. It is a form of what Aristotle (2004) called *phronesis*, or the pragmatic forms of reasoning that characterize the sort of everyday decisions professional communicators make. A simple example of *mêtis* might be a professional communicator determining the kinds of euphemisms that are acceptable or appropriate to use in a company-wide memo determining, explaining, or critiquing bathroom policies regarding transgender individuals. A person with a *mêtic* disposition will be rhetorically flexible toward what (in this case) might not be an everyday company memo—a memo that, depending on the circumstances, may require a not-so-everyday response.

One argument for the need to cultivate *mêtic* intelligence in professional communicators occurs within a discussion of the software project management strategy Agile (Pope-Ruark, 2014). Whereas traditional project management philosophies such as “waterfall planning” privilege top-down management that supports a clearly defined final project, Agile is specifically designed to be used in a non-hierarchical space, whether that space is an organization as a whole or simply a cross-functional team. Agile requires the flexibility needed to respond to unexpected circumstances, “*situationally specific strategies, processes and practices*” (Anderson et al., 2005, emphasis in original; qtd. in Pope-Ruark, 2014, p. 329).

In evaluating hierarchical versus non-hierarchical management strategies, Pope-Ruark (2014) argues that *mêtis* adds “depth to our reading of rhetorical situations, decisions about appropriate response, creativity in invention, and concern for ethical production” (pp. 327–328). The context of this comment occurs in her discussion of how hierarchical content management systems often require two rigidly stratified classes of users: one responsible for setting tasks, the other waiting upon instruction with little room for independent initiative. By comparison, Agile predicates itself upon a decentralized system where all project stakeholders (whether managers, coders, engineers, subordinators, etc.) are on equal footing in terms of the ability to create and interact. In brief, Pope-Ruark (2014) claims that using project management methodologies designed

for non-hierarchical systems demands a certain kind of professional communicator: one with a *mêtic* disposition.

We believe that this starting place is a crucial spot for thinking about the complexities of ethics in democratic workplaces. While the recent advocacy of *mêtic* intelligence in TPC scholarship is persuasive, one issue is that it carries no guarantee of the kind of ethical behavior most professional communicators would promote. One might very well find cunning and craftiness in an “ethic of expediency” (Katz, 1992). Dolmage (2016) also notes that *mêtis* is not necessarily an ethical good; rather, it requires a supplemental moral purpose to achieve ethical ends (p. 163). In a comment we do not mean as critical, neither Pope-Ruark (2014) nor Wilson and Wolford (2017) define the kind of supplemental ethics that a *mêtic* professional communicator should embody. As we demonstrate below, ethically questionable practices can occur even in workplaces intentionally designed to be democratic. These non-traditional workplaces that professional communicators are becoming more invested in demand more specific ethical supplementation.

Thus, just as *mêtic* intelligence is continuing to be promoted in TPC scholarship, we believe it is necessary to think more specifically about other kinds of ethical dispositions that complement the methodologies, work arrangements, and organizations that benefit from *mêtic* intelligence. We believe that such additional ethical supplementation includes a disposition committed to equality, which understands equality not only as a resource to distribute but as a habitual ongoing practice that is a characteristic (or disposition) of a good professional communicator.

For the remainder of this article, we apply such a notion of equality—as a dispositional ongoing practice rather than solely a resource to redistribute—to two examples of intentionally designed democratic workplaces: (1) a case study originally conducted by Hoffman (2005) on an employee cooperative that experienced ethical communication conflicts, and (2) a primary study conducted by one of the authors on a cooperative that saw social capital disrupt a commitment to equality. We hope to show that, even with the best intentions, and within organizations intentionally designed with democratic values like those described by Bernstein (1982), inequality can still occur. For democratic and non-hierarchical workplaces to succeed, then, practitioners need to approach

equality as ongoing practice, as a crucial, habitual characteristic of a professional communicator.

Equality as an Ongoing Practice

Most professional communicators will acknowledge that ethics is a core value to the field. The field has embraced what could be called ethical turns, including social perspectives (Blyler & Thralls, 1993) and cultural studies perspectives (Scott, Longo, & Wills, 2007), which investigate issues of power and legitimacy. However, even with these culturally conscious turns, Dombrowski's (1999) and Markel's (2000) foundational works on ethics in the field, and a special issue on ethics more than a decade ago (Dragga, 2001), ethics courses are still "not highly represented" in TPC curricula (Meloncon & Henschel, 2013). Calling attention to particular ethical frameworks, such as utilitarianism, deontology, or virtue ethics is uncommon.

The recent calls for incorporating *mêtic* intelligence in TPC (Pope-Ruark, 2014; Wilson & Wolford, 2017) are clearly motivated by ethical concerns. In paying attention to non-hierarchical spaces, Pope-Ruark's (2014) advocacy for *mêtic* intelligence is clearly motivated by an implicit democratic or egalitarian ethic. That is, work on *mêtis* is interested in philosophies that believe workers feel more fulfilled or content and are more effective in their workplaces if they have greater influence. This is not to say all work on *mêtis* is invested in equality or that ethics always equates to equality, only that an ethic invested in notions of equality appears to be a driving force for those interested in workplace democracy.

Democratic workplaces are thus prime locations to investigate the relationship of *mêtis* and equality. The logistics of "horizontalism" are not necessarily difficult; however, the challenge comes in finding employees who are committed to values of collective work (Hartman, 2010). For example, the use of a non-hierarchical methodology may enable those who have cultivated *mêtis* to have a better chance of succeeding within a democratic workplace, but the creation of such a space in no way guarantees that even those with *mêtis* will take part in the type of egalitarian practices their workplace would seem to demand.

To reiterate, the concept of *mêtis*, which a number of scholars (Detienne & Vernant, 1991; Dolmage, 2009; Hawhee, 2013; Pope-Ruark, 2014; Scott, 2008; Wilson & Wolford, 2017) have drawn upon in the

rhetorical tradition, is a form of "bodily intelligence" (Hawhee, 2013, p. 46). It is often translated as cunning, wily intelligence, or wisdom (Dolmage, 2009 p. 5). *Mêtis* is an acquired type of intelligence that enables one to act with cunning across a wide variety of contingent rhetorical situations, a "flexible, context-attentive intelligence" (Scott, p. 2008). It is precisely this capacity for flexibility and context awareness that makes *mêtis* so relevant to professional communicators.

If collective work demands or at least benefits from professional communicators developing *mêtic* intelligence, then such constraints also demand a specific commitment to an ethical framework that values equality. Much as some scholars (Detienne & Vernant, 1991; Dolmage, 2009; Hawhee, 2013; Pope-Ruark, 2014; Scott, 2008) view *mêtic* intelligence as a supplement to practical wisdom, we view a dispositional ethic of equality as a necessary supplement for effective work to take place in non-hierarchical and democratic spaces, whatever forms they may take. In other words, for these workplaces to function as they are designed, they also require participants to commit to an ethic of equality. By a commitment to equality we do not mean a general value in equality, such as in the statement, "I believe we are all equals." Rather, we suggest a commitment to equality that recognizes that even in the most democratically driven spaces—such as employee-owned cooperatives—acts of inequality can happen. Thus, a disposition committed to equality as an ongoing practice is a necessary supplement to the contemporary professional communicator's toolbox. For the articulation of such a disposition, we turn to the French political philosopher Rancière (1995; 1999).

Rancière (1995; 1999), whose work has been applied convincingly to U.S. contexts (see Ross, 1991; May, 2008), differs from a number of other contemporary political theorists, because he views equality not as something to be distributed—that is, as an institutional provision like a right to vote, which is often the case for liberal notions of equality (see Colton and Holmes, 2018)—but as a practice requiring continual verification. Even within a representative democracy, Rancière argues that hierarchies—what he calls "partitions of the sensible"—will inevitably form. In brief, by "sensible," Rancière means that hierarchical partitions seem intuitive to us. They seem to be "common sense." For example, even though the Occupy Wall Street movement in Zucatti Park

Workplace Democracy

claimed an ideological commitment to democracy and egalitarian governance, White male activists nevertheless dominated group deliberations, and the Occupy movement even faced accusations of anti-Semitism (Berger, 2011). As a result, the Occupy Wall Street participants were moved to eventually require a rule to ensure that non-White and female speakers were able to speak before a White male.

We use the example of Occupy Wall Street not to dismiss the impact of this movement but more to highlight Rancière's argument that inequality and hierarchy inevitably occur even when direct democracy or equality is the designed system of distribution: "'Social reality' is a reality of inequality" (1995, p. 48). A partition of the sensible can and will occur in any text, discourse, community, law, family, church, or organization, and these partitions can include any cultural habit and/or practice that prohibits or limits even one individual from being recognized as an equal. A clear example is when segregation in the deep south banned African-Americans from sitting in "Whites only" restaurants. What Rancière (1995, 1999) calls a verification of equality consists of acts of "dissensus" (1999) that disturb any partition of the sensible, such as when African-Americans staged sit-in protests in "Whites only" diners. In Rancière's terms, the protesters sought to verify their own equality within a legal and state-supported partition of the sensible that did not recognize or intentionally masked their equality.

While a sit-in is perhaps an obvious example, Rancière (1995; 1999) argues that partitions of the sensible occur in even the most democratically designed spaces, as our examples below demonstrate, sometimes even in places marked by an abundance of consent. For example, employees who cannot afford to leave their jobs may feel it necessary to consent to their own mistreatment in order to stay employed. Thus, understanding equality in Rancière's terms means that one is never complacent or content by the institutional mechanisms or structures within which one is situated, even if a particular structure was designed in the name of democracy. If one is committed to equality as Rancière sees it, one recognizes that any verification of a person's equality might be fleeting at best and may require renewed practices of recognition: first, the habitual re-appraisal of a situation to determine whether someone's equality may be going unrecognized and, then, the demonstration (whether grand or small)

that this someone (whether oneself or another) is an equal and deserves to be treated as such. Again, as counterintuitive as it may seem, such verifications of equality can often take the form of dissent in appearance. A demonstration that equality is not being verified will disrupt the stable order of things, even if that order was established through consent. While this notion of equality as an ongoing practice may sound exhausting, it is important to realize that we see this notion of equality as dispositional, as a habit that can be cultivated. While habits are not always easy to make or break, the strength of Rancière's idea of equality is that it enables enactment anywhere; it does not require institutional structures to verify one's equality.

To make the significance of our connection between Rancièrean equality and *métis* explicit to professional communicators, we want to affirm that we are not arguing for a specific communicative act but a disposition that can be applied to multiple forms of technical writing. Equality in Rancière's sense is akin to an Aristotelian virtue ethic in that there is no fixed version of its enactment, but it is a practice. According to May (2001), practices comprise

- (1) goal-directedness,
- (2) social normative governance, and
- (3) regularity of behavior.

First, practices have a purpose, an aim in mind. Second, practices are governed socially and normatively: Multiple people will know how to carry out the practice, and there will be standards determining (often multiple) correct and incorrect ways of doing it. Finally, practices contain a regularity of behavior: "In order for something to be a practice, the various people engaged in it must be able to be said to be 'doing the same thing' under some reasonable description of their behavior" (May, 2001, p. 12). As a basic example, most professional communicators practice proofreading on some level, yet they proofread at different times for different purposes (editing for content, grammar, design, etc.). They do so differently but with enough similarity that they can recognize the practice of proofreading a document, and they recognize that there are better and worse ways of proofreading.

Equality, then, is not something that is always going to look the same to each person, and this can be difficult when trying to conceptualize it as a professional communication practice; however, equality in Rancière's sense is based in practices, one's repeated actions in

re-verifying one's or another's equality whenever one sees that equality being erased or ignored. This practice of recognizing others' equality could be employed when writing policies, internal memos, manuals, even casual emails (or not, as in the case of sexual harassment). Thus, we claim that professional communicators should develop dispositions in which they see equality as a cultivated habit that might be put into practice in different situations and actions, including democratic workplaces. Again, above any other contribution, Rancière sees political equality as something that must be continually re-verified by individuals whose daily lives are impacted by partitions of the sensible and, in turn, aided and allied by individuals who can recognize this struggle in others and be in a position to be an ally or advocate.

Cooperatives, *Mêtic* Intelligence, and the Need for Dispositional Equality

Even democratically controlled organizations, such as employee-owned cooperatives, can have inequality demonstrated within their organizations. Correspondingly, we see within these scenarios an ideal opportunity to locate the need to cultivate dispositions of *mêtis* and equality as an ongoing practice. One example of such a demonstration of inequality within a democratic workplace is found in Hoffman's (2005) case study of Coop Cab and Edenfield's (2018) study of Owen's House Pub.

We look at these two examples (one is secondary research; the other is primary research) for a variety of reasons. First, each organization relies on professional communication and documentation in order to function, including dispute resolution documents such as incident reports, grievance process instructions, and related documents (Hoffman, 2005; Edenfield, 2018). Some dispute resolution communication practices are potentially extra-institutional, such as when employees apply social pressure (Hoffman, 2005; Edenfield, 2018). Second, both define themselves as democratic workplaces—workplaces that often require researchers to look to alternative and non-expert sites that are less conventional to TPC research, including taxicab companies and pubs. While deciding what sites of TPC research are legitimate can be an ideological issue (Alvesson, 1991; Berlin, 1988; Blyer, 1995; Harrison, 1994; Herndl, 1991, 1993), we follow in the tradition

of those scholars and practitioners who view TPC broadly (Johnson-Eiola, 2004; Kimball, 2006).

Hoffman's (2005) study of Coop Cab focuses on procedural justice and how men and women differ in their dispute resolution communication strategies, formal and informal. A worker-owned cooperative taxicab company, Coop Cab uses a Workers' Council to solve disputes after formal complaints. Hoffman (2005) concludes that both men and women had misgivings about the grievance process. According to Hoffman (2005), when men had disputes, they saw the cooperative structure as affording them informal (one might say *mêtic*) opportunities to discuss conflict resolution with their worker supervisors; however, the flat structure also "discouraged them from using the formal grievance procedures," as recourse through the formal structure signified to them a failure to resolve any issues they had with their peers (2005, p. 69). On the other hand, Hoffman's study showed that women did not even consider the informal process. Their choices were reduced to "raise a formal grievance or to do nothing" (2005, p. 70). Thus, the ways that grievances were resolved in this particular employee-owned business potentially produced unequal power relations, in some cases leading to employees leaving, and, in other cases, legal consequences.

Although she does not use the term, Hoffman (2005) is clearly describing partitions of the sensible, as Rancière would put it, as well as an institutional context that could benefit from the cultivation of *mêtic* dispositions committed to equality. Hoffman's study shows how "informal power and other societal inequalities may sufficiently permeate democratic workplaces and perpetuate the difficulties women contend with in formal grievance resolution" (2005, p. 52). Put in terms of *mêtis*, certain informal conventions of Coop Cab enabled men to practice forms of cunning, craftiness, and flexibility in their communication but seemed to restrict women from participating in the same types of communication. These conventions gave men an advantage in resolving their grievances. Two different examples of the difficulties women faced in Coop Cab as a result of the "informal power and social inequalities" include the cases of "Ursula" and "Shirley." According to Hoffman's study, Ursula was one employee of Coop Cab who articulated that the grievance procedures were "to act formally or not act at all," and that not acting at all was

Workplace Democracy

sometimes better because of the stress and anxiety that occurred as a result of the formal process (2005, p. 70). She felt that the formal process placed the burden on the person writing the grievance documentation:

It's like, how much am I willing to put up with? How much energy do I feel like putting into paperwork and filing a grievance and trying to articulate relatively minor things to other people? Not necessarily that they are really minor, but I don't have that energy. It's like, is it easier to fight for certain things or is it easier to put up with it and wait through it 'til you get to the end of it? (Hoffman, 2005, p. 70)

A more extreme case is that of Shirley, who felt her only recourse was to sue the cooperative. Hoffman writes, "Shirley had brought several grievances before the Workers' Council and anticipated bringing more in the future" (2005, p. 72). The Workers' Council, whom she saw as her peers, ruled that her grievance would not make it to an official hearing to be heard by the Workers' Council. Even though Shirley used a formal process—writing a grievance report and submitting it to the Workers' Council—to ensure democracy, her appeal was denied. This denial of a hearing was a clear demonstration of a partition of the sensible emerging. Similar to Ursula, Shirley did not see any recourse in an informal process, even though the formal process failed her; however, she felt so strongly about her grievance that she decided to go outside of the cooperative via a lawsuit. Unfortunately, one consequence of this decision was that her fellow employees began to shame her. This shaming bordered on harassment: "There were things all over the bulletin board that anybody who sues their own cooperative should get the fuck out if they're not happy. It's like, if you don't love your country, leave it, so to speak" (qtd. in Hoffman, 2005, p. 72).

In contrast to Ursula's and Shirley's experiences, the male employees at Coop Cab felt that tolerating the anxieties of the formal process was not even an issue. In this particular work environment, and from their perspectives, their own experiences offered no partitions of the sensible to overcome. Rather than "this or nothing," the men's choices were among an array of informal dispute resolution options (Hoffman, 2005, p. 70). Most of the men at Coop Cab who had a grievance believed that for most conflicts, the Workers' Council

did not need to be bothered, as another example from Hoffman demonstrates:

Jon: You can't get so worked up. Like some people get all worked up and bring a grievance about everything. That's their right; that's OK. But, me, I like to just talk to the person. Like if I think a dispatcher isn't treating me fairly, I'll just go and talk to the guy and reason with him. I don't get all excited. (2005, p. 71)

In the cases of Jon, Ursula, and Shirley above, structural equalities such as formal dispute processes are "supposed" to be the same for everyone, but as these examples demonstrate, the dispute resolution processes opened the way for unequal treatment based upon gender difference. Male employees were clearly able to cultivate a rich sense of *métis* within these procedures, as they felt they were able to be flexible in how they communicated their disputes. However, these forms of *métis* were not reflective of equality in Rancière's sense. For Rancière, someone committed to equality will habitually re-appraise any situation in which even one person may be treated as less than another, and, in response, call for that person to be recognized as an equal. This call to recognize one's equality need not be a grand political gesture. For example, we might imagine that if the cooperative employees saw equality as an ongoing practice, they would be more willing to see that strict reliance on formal dispute resolution communication might inadvertently create conditions of unequal treatment. To rectify this situation, the solution is not that women in the cooperative should just adopt the *métic* practices of the men. Rather than saying Ursula and Shirley shouldn't "get so worked up," a hypothetical response rooted in equality from Jon could have been that they should not *have to* get so worked up. That is, Jon could have questioned why he felt he had access to informal options and they did not, and he could use his informal access to advocate for them. The unstated decorum of the workplace culture, even though explicitly committed to democratic principles, created a partition of the sensible that privileged men over women in terms of dispute resolution communication practices.

Jon's flexible reactions to disputes—i.e., accessing informal methods of communication—were *métic* in practice, but they did not recognize the women's equality.

If Jon worked out of a notion of equality as an ongoing practice, then he likely would be more sympathetic and even encouraging to Ursula and Shirley when they used the formal grievance process. In this example, then, we see that just because someone works in a democratic workplace does not mean they will inherently embody an ethic of equality. In other words, Coop Cab demonstrates that, while democratic workplaces may be able to cultivate a generalized sense of *métis* among some employees (the men, in this case), there is no guarantee that employees will treat each other fairly.

Of course, Coop Cab is not the only democratic workplace whose admirable goals of democratic participation are not without the challenges of unequal power relations. Owen's House, a pub in a working-class neighborhood that operates through shared management among 10–15 employees (ranging from bartenders to cleaning staff) and the Board of Directors, also demonstrated the kinds of unfortunate social inequalities that occurred in Coop Cab. As part of Edenfield's (2016) two-year study, five long-time participants of Owen's House were interviewed. One of those participants, "Lamar," mentioned in his interview that when conflict arose over an issue not important to an employee, it was expedient at times to allow those with stronger feelings to influence or dominate governance, ultimately shaping the cooperative in ways that may not have reflected the organization's democratic commitments:

I feel like so many people involved are just nice fucking people, not that they aren't strong or not willing to fight for shit, but it's just not worth it to deal with the negativity and the backlash from standing up to someone. It allows people who are more controlling to control because the other people are like, "Okay, I'll just keep going and deal with my own shit." When the potential consequences are nastiness and negativity and it's something you don't feel strongly about, it's just easier not to participate. The people who are more forceful are the ones who are going to get their way because the rest of us, while we care, in all these little bitty things, it's just not worth it. (Lamar, personal communication, July 15, 2014)

Like Coop Cab, Owen's House had grievance processes dedicated to democratic procedures

(Edenfield, 2018). Nevertheless, as Lamar expressed above, instances of inequality could still occur (and not only along gender lines), even though democratic principles were central to Owen's House's mission. In cases such as these, consent is not necessarily an absolute ethical good, as it can undermine the democratic values of participation. Here, someone who has cultivated a dispositional ethic of equality would be wary of public unanimity or silent consent and look for opportunities to recognize the equality of those who are being silent, perhaps directly asking for dissent at times. For example, at Owen's House, those who found themselves continually taking the lead on writing and interpreting policy or taking the lead on projects might pause and bring attention to the fact that they are always leading the way, and that the same people continually leading is not necessarily a good thing. Even inadvertently, they may have perpetuated a partition of the sensible, in Rancière's terms. Taking equality into consideration, they would refuse to accept silence as consent; instead, they might invite others to participate, to disagree openly, and to create a dialogue.

These examples help to demonstrate our argument that while the cultivation of *métis* intelligence can lean toward ethical outcomes, the process is by no means inevitable. Inasmuch as partitions of the sensible continue to emerge within even those organizations explicitly committed to democratic principles, there exists a distinct need to cultivate a dispositional ethic of equality as an ongoing practice. This is a challenge. Equality will not inevitably be achieved within a stable distributive mechanism or institutional space by virtue of the existence of that space, even if certain organizations may engender these values more than others. Some employees working in democratic workplaces may be more inclined to come forward, to participate, to be opinionated. In certain instances, those people may be the appropriate person for the particular job. Nevertheless, a dispositional ethic of equality will habitually scrutinize the knee-jerk response to always look toward those same people to take the lead.

Conclusion and Notes Toward Cultivating Dispositions of *Métis* And Equality

Professional communicators do have the power to influence practices of workplace equality. A professional communicator always has some agency to impact the

Workplace Democracy

practice of equality, particularly if she finds herself in a democratic workplace. That is why cultivating dispositions committed to equality matters: A professional communicator can enact change.

There are three important points we would like our readers to take away from this article:

- Professional communicators should be paying more attention to non-hierarchical workplaces—particularly those committed to democracy.
- Democratic workplaces demand the development of certain ethical dispositions/characteristics in professional communicators: *métis* and equality as an ongoing practice.
- While the goals of democratic organizations are often noble, inequalities can still occur, thus the need to recognize the equality of oneself and others as an ongoing ethical practice rather than something solved solely through institutional policies.

While developing an ethical disposition committed to equality is no easy task, one of the ways people can consciously begin to do so is through reflecting on their practices. While developing new habitual practices is always a challenge, and a more in-depth guide to developing such habits is beyond the scope of this article, we do want to suggest questions adapted from May (2001) that individual professional communicators can ask themselves about their organization's practices when writing for dispute resolution and other regulatory documentation:

1. Goal directedness: What is the aim of this practice? What is our goal? In working toward that goal, are people being treated as equals in a given situation?
2. Social normative governance: What formal and informal processes and policies are preventing people from being treated as equals? What would it take to change those processes? What stakeholders are involved? Whose voice is not being heard?
3. Regularity of behavior: How can we redirect or change the habitual element of the practice that is undermining a person's equality? How can we make a habit of new behaviors that do support equality?

We realize that these questions are open-ended and only a starting point. Answering these questions is not easy and will not always look the same. Professional communicators asking themselves these questions should realize that this kind of reflection is not a “one

and done.” Rather, continually reflecting on equality should be integrated into any organization that lays claim to democratic principles. This point is not to undermine democratic workplaces as “not really” doing equality, but, rather, we hope to help cooperatives and other democratic workplaces do what they do better. Practicing equality is not something that can be solved by institutional policy alone or by simply saying, “Let’s be democratic.” First, we must recognize that equality is an ongoing practice and one that needs to be cultivated as a dispositional habit.

References

- Alvesson, M., & Willmott, H. (Eds.). (2003). *Studying management critically*. London, UK: Sage.
- Anderson, D., Augustine, S., Avery, C., Cockburn, A., Cohn, M., DeCarlo, D., Wysocki, R. (2005). *Declaration of interdependence*. Retrieved from <http://www.pmdoi.org>
- Aristotle. (2004). *Nicomachean ethics* (R. Crisp, Trans.). Cambridge, England: Cambridge University Press.
- Berger, J. (2011 October 21). Cries of anti-Semitism, but not at Zuccotti Park. *New York Times*. Retrieved from <http://www.nytimes.com/2011/10/22/nyregion/occupy-wall-street-criticized-for-flashes-of-anti-semitism.html>
- Bernstein, P. (1982). Necessary elements for effective worker participation in decision-making. In F. Lindenfield and J. Rothschild-Whitt (Eds.), *Workplace democracy and social change* (pp. 51–81). Boston, MA: Porter Sargent.
- Billeaux, M., Reynolds, A., Young-Hyman, T., & A. Zayim. (2011). Worker cooperative case study: Isthmus Engineering & Manufacturing. *Staff Paper 9: University of Wisconsin Center for Cooperatives*.
- Blyler, N. R., & Thralls, C. (1993). *Professional communication: The social perspective*. Newbury Park, CA: Sage.
- Brodwin, D. (2013). Why we need more employee-owned businesses. *U.S. News and Business*. <http://www.usnews.com/opinion/blogs/economicintelligence/2013/11/07/whyemployee-owned-businesses-work>.
- Cheney, G. (1995). Democracy in the workplace: Theory and practice from the perspective of communication. *Journal of Applied Communication*, 23, 167–200.

- Cheney, G., Santa Cruz, I., Peredo, A. M., & Nazareno, E. (2014). Worker cooperatives as an organizational alternative: Challenges, achievements and promise in business governance and ownership. *Organization*, 21(5), 591–603.
- Clark, D. (2006). Rhetoric of empowerment: Genre, activity, and the distribution of capital. In M. Zachry and C. Thrall (Eds.), *Communicative practices in workplaces and the professions: Cultural perspectives on the regulation of discourse and organizations* (pp. 155–179). Amityville, NY: Baywood.
- Colton, J. S., & Holmes, S. (2018). A social justice theory of active equality for technical communication. *Journal of Technical Writing and Communication*, 48, 4–30.
- Craig, B., & Pencavel, J. (1995). Participation and productivity: A comparison of worker cooperatives and conventional firms in the plywood industry. *Brookings Papers: Microeconomics*. 121–174.
- Denning, S. (2012 April 17). The case against Agile: Ten perennial management objections. *Forbes*. Retrieved from <https://www.forbes.com/sites/stevedenning/2012/04/17/the-case-against-agile-ten-perennial-management-objections/#a4479133a955>
- Detienne, M., & Vernant, J. P. (1991). *Cunning intelligence in Greek culture and society*. (J. Lloyd, Trans.). Chicago, IL: University of Chicago Press. (Original work published 1978)
- Dolmage, J. (2009). Mêtis, mêtis, mestiza, Medusa: Rhetorical bodies across rhetorical traditions. *Rhetoric Review*, 28, 1–28.
- Dolmage, J. (2016). *Disability rhetoric*. Syracuse, NY: Syracuse UP.
- Dombrowski, P. (1999). *Ethics in technical communication*. Boston, MA: Allyn and Bacon.
- Dragga, S. (2001). (Ed.) Special issue on ethics in technical communication. *Technical Communication Quarterly*, 10(3).
- Drucker, P. F. (1987). The coming of the new organization. *Harvard Business Review*, January–February. Reprint 88105.
- Edenfield, A. C. (2018). The burden of ambiguity: Writing at a cooperative. *Technical Communication*, 65, 31–45.
- Gee, J., Hull, G., & Lankshear, C. (1996). *The new work order: Behind the language of new capitalism*. Sydney, Australia: Westview.
- Gordon Nembhard, J. (2014). *Collective courage: A history of African American cooperative economic thought and practice*. University Park, PA: Pennsylvania State UP.
- Harrison, T. (1994). Communication and interdependence in democratic organizations. *Communication Yearbook*, 17, 247–274.
- Hart, H., & Conklin, J. (2006). Toward a meaningful model of technical communication. *Technical Communication*, 53, 395–415.
- Hartman, B. (2010, January). Doing agile isn't the same as BEING agile!!! Retrieved from <http://www.slideshare.net/lazygolfer/doing-agile-isnt-the-same-as-being-agile>
- Hawhee, D. (2013). *Bodily arts: Rhetoric and athletics in ancient Greece*. Austin, TX: University of Texas Press.
- Hoffman, E. A. (2005). Dispute resolution in a worker cooperative: Formal procedures and procedural justice. *Law and Society Review*, 39(1), 51–82.
- Jarrett, S. (1991). Feminism and composition: The case for conflict. In Patricia Harkin and John Schilb (Eds.), *Contending with words: composition and rhetoric in a postmodern age* (pp. 105–123). New York, NY: MLA.
- Johnson-Eilola, J. (1996). Relocating the value of work: Technical communication in a post- industrial age. *Technical Communication Quarterly*, 5, 245–270.
- Kato, T., Poutsma, E., & Ligthart, P. E. (Eds.). (2017). *Sharing in the company: Determinants, processes and outcomes of employee participation* (Vol. 17). Emerald Group Publishing.
- Katz, S. (1992). The ethic of expediency: Classical rhetoric, technology, and the Holocaust. *College English*, 54(2), 255–275.
- Kastelle, T. (2013 November 20). Hierarchy is overrated. Retrieved from <https://hbr.org/2013/11/hierarchy-is-overrated>
- Kaswan, M. J. (2013). Democratic differences: How type of ownership affects workplace democracy and its broader social effects. In *Sharing ownership, profits, and decision-making in the 21st century* (261–294). Bingley, UK: Emerald Group Publishing Limited.

Workplace Democracy

- Kimball, M. (2006). Cars, culture, and tactical technical communication. *Technical Communication Quarterly*, 15, 67–86.
- Kimball, M. (2017). Introduction to special issue on tactical technical communication. *Technical Communication Quarterly*, 26, 1–7.
- Longo, B. (2000). *Spurious coin: A history of science, and technical writing*. New York, NY: SUNY UP.
- May, T. (2001). *Our practices, our selves: Or, what it means to be human*. State College, PA: Penn State UP.
- May, T. (2008). *The political thought of Jacques Rancière: Creating equality*. Edinburgh, UK: Edinburgh UP.
- Markel, M. H. (2000). *Ethics in technical communication: A critique and synthesis*. West Port, CT: Ablex.
- May, S. K., Cheney, G., & Roper, J. (Eds.). (2007). *The debate over corporate social responsibility*. Oxford, UK: Oxford UP.
- Meloncon, L., & Henschel, S. (2013). Current state of U.S. undergraduate degree programs in technical and professional communication. *Technical Communication*, 60, 45–64.
- Miller, C. R. (1979). A humanistic rationale for technical rational. *College English*, 40(4), 610–617.
- Myers, K. A. (2011). Metanoia and the transformation of opportunity. *Rhetoric Society Quarterly*, 41(1), 1–18.
- Pope-Ruark, R. (2014). A case for *mêtic* intelligence in technical and professional programs. *Technical Communication Quarterly*, 23, 323–340.
- Rancière, J. (1999) *Disagreement: Politics and philosophy*. (J. Rose, Trans.). Minneapolis, MN: University of Minnesota Press.
- Rancière, J. (1995). *On the shores of politics*. (L. Heron, Trans.). New York, NY: Verso.
- Rayasam, R. (2008 April 24). Why workplace democracy can be good business: Letting employees take part in decision making may boost productivity and profits. *US News*. Retrieved from <http://money.usnews.com/money/careers/articles/2008/04/24/whyworkplace-democracy-can-be-good-business>
- Rice, J. (2012). *Distant publics: Development rhetoric and the subject of crisis*. Pittsburgh, PA: University of Pittsburgh Press.
- Rinehart, J. W. (2006). *The tyranny of work: Alienation and the labour process* (5th ed.). Ontario, CA: Nelson Education.
- Ringold, J. (2016 March 4). How a radical shift left Zappos reeling. *Fortune*. Retrieved from <http://fortune.com/zappos-tony-hsieh-holacracy/>
- Robertson, B. (2015). *Holacracy: The new management system for a rapidly changing world*. New York, NY: Henry Holt and Co.
- Ross, K. (1991). Rancière and the practice of equality. *Social Text*, 29, 57–71.
- Rothschild-Whitt, J. (1979). The collectivist organization: An alternative to rational-bureaucratic models. *American Sociological Review*, 509–527.
- Scott, J. B. (2008). The practice of usability: Teaching user engagement through service learning. *Technical Communication Quarterly*, 17, 381–412.
- Scott, B. J., Longo, B., & Wills, K.V. (2007). Why cultural studies? Expanding technical communication's critical toolbox. In J. B. Scott, B. Longo, & K. V. Wills (Eds.), *Critical power tools: Technical communication and cultural studies* (pp. 1–19). Albany, NY: SUNY Press.
- Spicer, A., Alvesson, M., & Kärreman, D. (2009). Critical performativity: The unfinished business of critical management studies. *Human Relations*, 62(4), 537–560.
- Spinuzzi, C. (2007). Who killed Rex? Tracing a message through three kinds of network. In M. Zachry and C. Thrall (Eds.), *Communicative practices in workplaces and the professions: Cultural perspectives on the regulation of discourse and organizations*. Amityville, NY: Baywood Press.
- Spinuzzi, C. (2013). All edge: Understanding the new workplace networks. Austin Chamber of Commerce. Austin, TX. Presentation. <http://clayspinuzzi.com/2013/11/presentationall-edgeexploring-the-new-workplace-networks/>
- Spinuzzi, C. (2014). How nonemployee firms stage-manage ad-hoc collaboration: An activity theory analysis. *Technical Communication Quarterly*, 23, 88–114.
- Spinuzzi, C. (2015). *All edge: Inside the new workplace networks*. Chicago, IL: University of Chicago Press.
- Skyrme, D. (2007). *Knowledge networking: Creating the collaborative enterprise*. Woburn, MA: Routledge.

- Thrift, N. (2005). *Knowing capitalism*. London, England: Sage.
- Valve. (2012). *Handbook for new employees*. Bellevue, WA: Valve Press.
- Vallor, S. (2016). *Technology and the virtues: A philosophical guide to a future worth wanting*. Oxford, UK: Oxford University Press.
- Waterman, R. Jr. (1990). *Adhocracy*. New York, NY: Norton.
- Williams, R. G. (2007). *The cooperative movement: Globalization from below*. Hampshire, England: Ashgate.
- Wilson, G., & Wolford, R. (2017). The technical communicator as (post-postmodern) discourse worker. *Journal of Business and Technical Communication*, 31, 3–29.
- Winsor, D. A. (1996). *Writing like an engineer: A rhetorical education*. New York, NY: Routledge.
- Winsor, D. A. (2001). Learning to do knowledge work in systems of distributed cognition. *Journal of Business and Technical Communication*, 15, 5–28.
- Winsor, D. A. (2003). *Writing power: Communication in an engineering center*. Albany, NY: SUNY University Press.
- Zachry, M. (2000). Communicative practices in the workplace: A historical examination of genre development. *Journal of Technical Writing and Communication*, 30, 57–79.
- Zeuli, K. A., & Cropp, R. (2004). *Cooperatives: Principles and practices in the 21st Century*. University of Wisconsin Extension Publication A1457. University of Wisconsin Center for Cooperatives.
- Zwick, T. (2004). Employee participation and productivity. *Labour Economics*, 11(6), 715–740.

About the Authors

Jared S. Colton is an assistant professor of Technical Communication and Rhetoric at Utah State University. His research addresses rhetoric, ethics, and politics in technical communication and digital rhetoric, particularly how classical and contemporary ethical frameworks can inform practice. His work can be found in *Technical Communication Quarterly*, *Computers and Composition*, and other journals. His book *Rhetoric, Technology, and the Virtues*, co-authored with Steve Holmes, was published in 2018. He is available at jared.colton@usu.edu.

Avery C. Edenfield is an assistant professor of Technical Communication and Rhetoric at Utah State University. His research agenda works at the intersections of professional communication and community-embedded workspaces with specific attention to cooperatives, collectives, and nonprofits. His research interests include theories of participation, rhetorics of empowerment and democracy, and community engagement in professional communication. Avery's work has appeared in *Journal of Technical Writing and Communication*, *Nonprofit Quarterly*, and *Technical Communication*. He can be reached at avery.edenfield@usu.edu.

Steve Holmes is an assistant professor of Writing and Rhetoric at George Mason University where he publishes in the areas of digital rhetoric, composition studies, and professional and technical writing. He is the author of two books: *Procedural Habits: The Rhetoric of Videogames as Embodied Practice* (2017) and, with Jared S. Colton, *Rhetoric, Technology, and the Virtues* (2018). He is available at sholmes9@gmu.edu.

Manuscript received 6 July 2017, revised 1 October 2017; accepted 14 December 2017.

Genre Chameleon: Email, Professional Writing Curriculum, and Workplace Writing Expectations

By Patricia Welsh Droz and Lorie Stagg Jacobs

Abstract

Purpose: Inspired by the National Commission on Writing's 2004 job market survey, we sought to verify that our professional writing curriculum met the needs of local employers, and to test if a demand exists for a writing major. Our study explores workplace genre conventions in light of responses.

Method: Using a grounded theory approach, we gathered data in two stages using a mixed-methods design of interviews and questionnaires.

Results: Seventy-three percent of respondents indicated that their respective companies require greater than three quarters of salaried employees to produce formal workplace writing. Further, most respondents (92%) affirmed that prospective professional/salaried employees are "almost always" adversely affected by poorly written materials. Respondents defined "poor writing" in prospective and new hires in a variety of ways. All respondents chose Email as a "daily genre of writing" that eclipses the popularity of any other genre. Applicants and new hires were perceived negatively if "formal" written email skills were absent.

Conclusion: New hires' genre convention mistakes are interpreted as lack of training or skill, or knowledge errors. We posit that novices must adapt to the company writing culture, learning the communicative threshold concepts as they would other aspects of company culture. We posit email has a new, descriptive grammar, altogether—a set of rules deployed in individual workplaces that may not carry over to the next employer. So, we propose that email be taught and recognized in workplaces as what we have termed a "chameleon genre," a genre that does whatever its users want it to do.

Keywords: workplace writing for non-majors, professional writing curriculum, email as genre, communities of practice, threshold concepts

Practitioner's Takeaway:

- Recreating the 2004 National Commission on Writing study for our local job market, researchers confirmed writing is even more important for today's workplace, most noticeably in the resounding value placed on effective email communication in multiple and variable contexts.
- Researchers conclude email is an ever-changing reflection of and response to workplace culture, and, therefore, instructors, textbooks, and even workplaces themselves could do a better job of describing the chameleon genre for students and new hires.

Introduction

According to Lisa Meloncon (2012), professional writing programs “are an important touchstone in the field more so than other academic programs because they sit at the intersection between academia and industry providing an interesting mix of training and education, a bridge between theory and practice” (p. 220). Motivated by this connection and newly tasked with marketing a budding professional writing program with an existing minor, a developing major, and an updated graduate degree, our research team began the work of analyzing our target audience (students) and creating marketing materials. However, we quickly discovered that to truly understand the wants and needs of potential students, we needed to extend our market analysis beyond campus boundaries, reaching toward surrounding businesses and community partners. Furthermore, we needed to interrogate the parameters of our academic duties, identifying not only how the workplace can inform program development but also how (and if) program development can influence the workplace.

Extending and localizing the 2004 survey and report by the National Commission on Writing (NCW), *Writing: A Ticket to Work, or a Ticket Out*, our research explores the local business’ and economy leaders’ attitudes about writing in the workplace. The original NCW report targeted members of the Business Roundtable, human resource managers from national and multinational corporations who cumulatively employ over eight million workers, and collected a total of 64 responses. Our study captured perspectives from business owners, employees, and human resource managers alike from a range of corporation sizes. For example, our students are regularly hired by NASA-Johnson Space Center, Boeing and similar aerospace industry leaders, as well as Fortune 500 companies, plus health and social service agencies. These organizations and businesses expect that our graduates will be able to write clearly, cogently, and effectively. Unfortunately, this is often not the case. On a national scale, technical communicators know from the NCW’s report that employers routinely spend millions of dollars on re-training skills—writing and communication chief among them. Our project seeks to define and describe the writing demands of our local marketplace.

Like many, we often wonder whether or not our curriculum is sufficiently meeting the needs of

our students. Any good writing program strives to assess and re-assess in an effort to grow and develop with the demands of technology and the modern workplace. At our institution, upper-level writing has long been relegated to the back seat in education as a “service” to other fields; for example, we teach Written Communication in Business for the College of Business, Technical Writing for the College of Computer Science & Engineering, Writing for Education, and Writing for Social Sciences, among others. There is a constant demand for teaching effectiveness. Additionally, our program seeks to extend our minor in Professional Writing to a major. Thus, the original purpose of our research was to verify that our emerging curriculum was aligned with the needs of significant local employers and that there was a demand for a major.

To explore these issues fully, we will provide institutional context that led to the study, some of the theories that underlie our discussion, detailed methods and results, and novel insights about the teaching of workplace genres, specifically email, in light of threshold concepts.

Institutional Context

If our goal is to learn more about how we can best meet the needs of our students and the businesses they’ll likely work for, it is valuable to reflect on who these students are exactly. Our institution is a regional commuter campus, four-year school, that offers several master’s degrees and a few doctoral programs. We are located in Southeast Texas, part of the Houston metroplex. Houston is now the fourth largest city in the nation and home to the largest medical center in the world (“Facts and Figures,” 2017). The area is home to thousands of energy-related firms, making Houston the “Energy Capital of the World.” In addition, 23 Fortune 500 companies are headquartered here and another 40 maintain a significant presence. Houston is booming. Therefore, most of our students are local and plan to stay that way. We are confident that, for our students, the demands of the local marketplace are more important than those on a national scale.

Approximately 90% of our graduating students transfer from another institution; most (around 60%) transfer in their junior year after completing two years at community college, for the purpose of completing a baccalaureate degree. We are a Hispanic-serving

Genre Chameleon

institution boasting a student population that is 35% Latina/o. Our students are traditional aged but non-traditional: While we have a significant group of older students returning to school for a second career (29%), 70% are between the ages of 18 and 27. Many of them are veterans attending on the G.I. Bill. Forty percent of our students are the first in their families to go to college, and 50% are Pell eligible. In our experience with them, we have ascertained that these are people who want what they perceive to be “pragmatic classes” that can be applied directly to their future careers.

As noted above, the majority of our students transfer from one of the area community colleges or earn dual-credit in high school, thereby skipping our first-year writing series. However, a writing in the disciplines course is required for all majors at our institution; thus, nearly every student will eventually sit in one of our writing program classrooms. The vast majority of our students are attending school while working 30 hours or more, they are often parents, and nearly all of them are juggling multiple responsibilities. This makes extra time on campus unlikely. This aligns with Tinto and Engle’s (2008) findings that “[working-class] students are less likely to be engaged in the academic and social experiences that foster success in college, such as studying in groups, interacting with faculty and other students, participating in extracurricular activities, and using support services” (p. 3), work that typically happens outside of the classroom. Moreover, this group of students needs to know why higher education matters and how it will impact their future success. Our students need buy-in; they value “value.” Therefore, the work of engaging students must happen in the classroom. How better to build a pragmatic connection between classroom work and the workplace than to learn more about the real-life writing requirements of their future jobs?

Writing for Success

Technical communicators and educators know from the 2004 NCW survey of human resources managers that “opportunities for salaried employment are limited for employees unable to communicate clearly” (p. 19). The NCW calls writing a “gatekeeper” to the workplace and reports that more than two thirds of salaried employees at the surveyed firms have some responsibility for writing as a part of their regular duties. This finding is of particular concern for minority and working-class

students who are invested in obtaining the upward mobility of salaried employment.

Because writing is so important on the job, business leaders put a lot of value on it when evaluating job candidates. The NCW (2004) reports, for instance, that “fully 86 percent of responding companies report they would hold poorly written application materials against a job candidate, either ‘frequently’ or ‘almost always’” (p.10). One respondent to the 2004 NCW survey wrote, “good writing is a sign of good thinking” (p. 8). Writing has also been consistently valued by employers over time. In 2015, the Association of American Colleges & Universities (AAC&U) reported results from a poll of 400 employers and found that 82% rated written communication as a top priority for college graduates entering the job market. In short, writing ability is still the ticket to landing a good job.

Writing is also important for long-term success and promotion. The NCW (2004) found that writing plays a role in promotion decisions for more than 50% of all responding companies. However, the NCW also pointed out that their respondents likely had the pick of graduates from the best schools, and the companies where writing mattered most screened applicants for writing ability before hiring. In other words, writing plays less of a role in promotion amongst their respondents because writing skills are a given for hiring in the first place. Therefore, the 2004 business leaders felt that “a lack of writing ability is more likely to be a factor in *termination* than in promotion decisions” (p. 15, emphasis added). Respondents were not asked explicitly about promotion decisions in the 2015 AAC&U study. However, several of the questions asked about “long-term success” of college graduates, which certainly implies promotion. Indeed, one conclusion from the AAC&U report is that written communication, along with problem-solving and critical thinking, is more important than a student’s major for determining long term success.

Both of the studies discussed above investigate on a national scale. While we found both useful in justifying a professional writing major to administration, we still wanted to provide more specific, relevant data for our students. It would be easy for many of our working-class students to dismiss national data as “not applicable” to their unique situations. Therefore, one goal of our study was to update and tailor the NCW’s survey to learn more about the local Houston job market.

Disconnect

Invoking Read and Michaud (2015), “as [we thought] more about [our] dilemma—how to design a [program] in professional writing for an audience of multi-major undergraduate students”—we began to think about our population of predominantly working-class students, whose only “exposure to workplace literacy” (p. 428) may be our curriculum. We want to believe our graduates embody Read and Michaud’s (2015) assertion that “what students take with them across the academic-workplace boundary is less a set of explicitly transferable skills and more a generalized rhetorical capacity that enables them to successfully adapt to new rhetorical situations” (p. 428). Nonetheless, the degree to which rhetorical capacity transfers has been debated for decades (Freedman, Adam, & Smart, 1994; Winsor, 1996; Dannels, 2003; Russell, 1997; Anson & Forsberg, 1990; Yu, 2008).

Further, national studies indicate employers do not think highly of the writing skills of new college graduates. The AAC&U (2015) report states “employers feel that today’s college graduates are not particularly well prepared to achieve the learning outcomes that they view as important” (p. 1), including written communication. Further, there is a disconnect between employers’ assessment of graduates’ preparedness and the students’ assessment of themselves. For example, 65% of college students surveyed said they felt they were well prepared in written communication. Whereas, only 27% of employers felt the same way. Only critical thinking had a wider gap. We believe most of our readers would agree critical thinking and written communication go hand in hand.

The NCW (2004) mailed questionnaires to 120 human resources managers and had the resources to follow up with those individuals so that they received 64 responses at a response rate of 53.3%. The paper questionnaire asked respondents to describe the kinds of writing typical on the job and found that email and oral presentations are ubiquitous across industries. In addition, in 2004, technical and formal reports as well as memos and (non-electronic) correspondence were quite common in most companies. This likely accounts for the genre coverage of most business and technical communication textbooks, which are likely to contain multiple chapters on reports and correspondence. We wondered whether the same genres are valued today, given the even more electronic and connected nature of the 2017 workplace.

The 2004 report also asked respondents to identify specific writing traits that were valuable in the workplace. Researchers concluded “whatever the form of communication, it is clear that respondents expect written materials to be accurate, clear, and grammatically correct” (NCW, p. 11). Writing instructors know that each of these is a function of the rhetorical situation, given different audiences are likely to be more or less forgiving of “error.”

Faculty in other disciplines have noticed that classroom assignments are limited in their ability to replicate the audience awareness required in the workplace. Describing engineering students in their disciplinary courses, Paretti (2006) points out the following:

While faculty routinely develop assignments that reflect common workplace documents such as proposals, progress reports, and design specifications, [engineering faculty] do not develop assignments that enable students to enact the critical workplace practice of adapting those formats to the needs of individual audiences. Consequently, students master formats but struggle to successfully adapt the content, organization, tone, and design of those formats to the specific needs of the situation—and thus fail to communicate effectively in the workplace. (p. 190)

She argues engineering faculty should, ideally, aim for real-world experiences in the classroom via service-learning, client-based models, and problem-based learning, but acknowledges some of these methods are too time-consuming to be practical in many classrooms.

Susan Conrad (2017) recently extended the discussion of engineering students’ communication skills, stating that while many studies have identified the gap between student and workplace writing, few have examined those differences: “Underlying the student writing problems were misconceptions about effective writing, ignorance of genre expectations, weak language skills, and a failure to appreciate that written words, not just calculations, express engineering content” (p. 191). She also notes, “Handbooks and textbooks meant to teach technical writing are rarely based on research about effective writing in industry contexts, and they have been found to misrepresent workplace communication needs” (p. 193). Conrad

Genre Chameleon

thus suggests that the problem isn't just within engineering classrooms but possibly general, multi-major technical writing classrooms as well.

Genre or Non-genre?

Literacy and, by extension, genre have long been studied as a function within social hierarchy, made ever more complicated by socio-economic status (Brandt, 2001; Hull, 1993; Hull, 1997; Miller, 1984; Smart, 1993; Winsor, 2000). Smart (1993) defines genre "as a broad rhetorical strategy enacted, collectively, by members of a community in order to create knowledge essential to their aims" (p. 124). He goes on to explain that genres are site specific: "The community invents the genres it needs for creating written knowledge" (pp. 124–125). Smart argues that this theory helps explain both the "textual features common to all the community's genres and for textual features that differentiate these genres" (p. 124). More recently, others have identified a "literacy conflict" upon entering the workplace. Remley (2014) suggests, "a literacy conflict occurs when communication practices used in workplaces appear to compete with cultural perceptions of which skills ought to be valued or are discarded as utilitarian within a specific historical context" (p. 5). In other words, if you enter a new workplace but do not sign your email message the way everyone else does, your literacy (competence) may be perceived as questionable. Perhaps due to the fluidity of 21st century means of communication, Horner (2013) defines literacy as "a constantly shifting set of unstable, internally various, fluid and heterogeneous practices" (p. 2). Horner argues, "The emergence of new literacy technologies has made newly visible *as* technologies those literacy technologies that previously had been taken for granted as, and equated with, literacy" (p. 6, emphasis in the original). The modern workplace must be re-theorized in such a way that we, and by extension students, can keep pace with ever-changing genres and emerging written technologies.

Linguists have conducted studies of workplace writing in different parts of the world, identifying genre complications on the job, specifically those that arise when traditional genres go digital (Davies & Birbili, 2000; Giltrow & Stein, 2009; Gillearts, 2012; AlAfnan, 2015). But questions remain about the all-too-ubiquitous email. A few have homed in on the solicitation email (phishing) as its own genre under the

larger umbrella of electronic mail message (Ross, 2009; Viswamohan, Hadfield, & Hadfield, 2010). On the other hand, Giltrow and Stein (2009) argue that few would consider email a genre anymore: "It is probably more correct to say that it enables several genres, but is there a superordinate category? A hyper-genre?" (pp. 9–10). This idea attempts to account for the inherent differences in rhetorical situation of email. For example, an email to a friend or close co-worker would be quite different than one to a client, just as an email that delivers job application materials would be different than one that announces a new company policy.

More recent studies are still trying to define and describe the email message. Gillearts (2012) studied email use in a Belgian company and pointed to its "hybridity," a blend between dialogue and written communication. Others have noted the hybrid nature of email, though not in the workplace setting. Peter Elbow notes that many would not classify email as "writing" because of its close ties to speech. Yet, in his view, "email is a powerful example of how it's possible to bring the *ease* of speaking to the activity of writing" (2012, p. 136, emphasis in the original). Perhaps it is the supposed ease of email that creates communicative problems on the job, since even the experts can't decide if email is spam, hyper-genre, hybrid-genre, speech-genre, or even a genre at all. Email functions as a chameleon genre, ever-changing to match varying rhetorical situations. Email conventions vary from workplace to workplace and fluctuate between delivery device, dialogue, and stand-alone message, making it hard to pin down. While this article will focus largely on email as an example of our findings, we theorize that other genres will need to be similarly recontextualized as new technologies emerge.

Communities of Practice

Situated learning theory (Lave & Wenger, 1991) questions whether traditional classroom-based learning is as effective as situational learning in the workplace or other "real-world" arenas. Lave and Wenger posited that "communities of practice" surround us and that learning itself is inherently social. Communities of practice exist everywhere from roller-hockey teams (Adler-Kassner, 2014) to funeral homes (Valentine, Woodthorpe, & Easthope, 2013). Communities of Practice (CoPs) have been studied in dozens of workplace settings and are the basis for such

pedagogical methods as service-learning. One integral feature of CoPs is the emerging identity formation of members. More recent work links CoPs and threshold concepts (Land, Meyer, & Flanagan, 2016; Adler-Kassner & Wardle, 2015) or “new and previously inaccessible way[s] of thinking about something [. . .] [which] represent [. . .] transformed way[s] of understanding, or interpreting, or viewing something without which the learner cannot progress [in the discipline]” (Meyer & Land, 2006, as quoted by Adler-Kassner, 2014, p. 451). Adler-Kassner (2014) explains that failure to understand the threshold concepts of a discipline (or workplace) could result in failed membership on the part of the novice. Appropriate use of email may be a threshold concept in many institutions.

For example, Rains and Young (2006) discuss the email signature as a culturally learned representation of workplace identity. Just the signature. Their analysis finds that signatory information, such as education and job title, is used to convey status or authority. Thus, the signature is an important cultural signifier that cuts across institutions and professions: “Signatures represent an electronic identity that is a co-product of one’s work environment and the constraints/opportunities of email . . . [It] is also distinct in that it must be amenable to one’s co-present interactions” (Rains & Young, 2006, p. 1056). They go on to discuss how signatures may provide a sense of identity or connectedness within the organization or may be a conflation of privacy and accountability concerns, given regular email scandals (Rains & Young, 2006).

Additionally, Faith Kurtyka (2015) uses linguistic analysis to taxonomize the development of leadership skills via the emails of one sorority leader. Kurtyka points to the rhetorical strategies used over time to “try out a range of intellectual tools for different leadership personas” (p. 22) all within her email messages to the group. An interesting aspect of both Rains and Young’s (2006) and Kurtyka’s (2015) articles is that they emphasize how these strategies are learned behavior upon entering a new community of practice or changing roles within a CoP. Appropriate and/or effective use of email and other workplace-specific genres demonstrates membership in the target CoP.

The burden for educators, then, is to “pull back the curtain[s] on the formation of disciplinary expertise” (Nowacek, 2011, p. 129). Similar to Adler-Kassner, we

hope to adapt professional writing courses so that “they explicitly address *how* students learn to identify and participate in the threshold concepts of the discipline in which the course is situated” (2014, p. 451). Adler-Kassner, among others, is a champion of service-learning as a solution that emulates communities of practice and addresses both audience and genre confusion (Bush-Bacelis, 1998; Cox, Ortmeier-Hooper, & Tiravassi, 2009; Dubinsky & Bowdon, 2005; Stone, 2000). Service-learning offers the novice the opportunity to practice meeting real-life audience demands and discovering genres unique to a specific workplace. Therefore, novices can practice joining a new CoP or at least see one in action, even if only temporarily.

Although the benefits of service-learning cannot be denied, such strategies are often too time-consuming to be practical. As described above, our students are unlikely to spend time outside of class doing field work, even those who might intellectually prefer the pragmatism of on-the-job-like training. Further, many of our junior-level writing-in-the-disciplines courses are taught by adjuncts and pre-tenured professors who need more efficient, less cumbersome methods to draw on. We imagine service-learning playing a role in the capstone course of our emerging major but not being an ideal solution for the lower-level courses required of non-majors. What remains, then, is how to teach workplace genres effectively in absentia from the workplace itself.

Thus, our research questions are as follows:

- How essential are writing skills to hiring in our local marketplace?
- How essential is writing to promotion and tenure in the local workplace?
- If instructors take their teaching cues from textbooks, are we teaching the right things? Do area employers really value the genres we teach?
- Do members of the local workplace use the same language academics and practitioners do to talk about genre?

Method

Using a grounded theory approach, we gathered data in two stages using a mixed-methods design of interviews and questionnaires. Stage 1 data grounded our theoretical approach for Stage 2.

Genre Chameleon

Stage One: Semi-structured Interviews of Local Professionals

Instrument

To further understand the role of writing in the workplace, we gathered qualitative data via semi-structured interviews with six respondents from four of the major industries in our geographical area, as defined by our university's career services office: aerospace, finance, social services, and healthcare. Interview questions were adapted from the 2004 NCW survey instrument, which focused on the common genres of writing in the workplace, as well as the importance of communication skills in the hiring, retention, and promotion of recruits. (See Appendix A for question set.)

Participants and data

Interview respondents were solicited from our personal contacts, no incentives were offered, and interviews were conducted in neutral public locations such as restaurants and coffee shops. Interviews were audio-recorded using Recorder, a smartphone application, and later transcribed using edited verbatim transcription conventions (Gubrium & Holstein, 2001).

Our original intention for the project was to simply gather marketable catchphrases from industry insiders for inclusion on our writing program's promotional materials. We thus sought a small and admittedly unrepresentative respondent pool. However, our initial inquiry revealed common responses across industries and our unaffiliated networks, which warranted further investigation.

Theoretical framework

Driven by the ubiquity of similar responses, we systematized our approach with "Discourse Spotting" (Sunderland, 2004), a method that reveals recurrent interpretive discourses or topoi, the latter being the more recognizable term for rhetoricians. To move past an informal insight and into a formal analysis, we coded the transcripts for analytically interesting segments of talk to discover recurrent themes, which were then categorized as two interpretive discourses: Audience and Acculturation. Respondents bemoaned new hires' lack of professionalism in communication, which we coded as "lack of audience awareness." Respondents also bemoaned the process of acculturating new hires, or the expenditure of time and labor in new hires' acquisition

of institutional communication practices. "Audience" and "Acculturation," therefore, became our point of departure for Stage Two.

Stage Two: Self-administered Questionnaires

Instrument

The theoretical framework grounded in Stage 1 became our launching point for Stage 2. As with our interviews in Stage 1, we aimed in Stage 2 to reveal the most common genres of writing, the quantity of writing, and the perceived value of writing in professional spaces. We thus adapted our interview set into a questionnaire for wider survey, but we added two questions to help us develop a greater understanding of the discourses of Audience and Acculturation in senior colleagues' understandings of new hires' communication patterns (See Appendix B for Questionnaire). We used Qualtrics software to draft and disseminate the instrument.

Participants

We distributed our survey via bulk email to the 790 employers registered in our Jobs4Hawks database. We sent a total of two requests, spaced four weeks apart. Self-selected participants self-administered the questionnaire, and no incentives were offered. We received a total of 26 complete surveys (.032 response rate), a below-average return (Sheehan, 2001). The original NCW report received a total of 64 completed surveys, which is also a suboptimal return (Lauer & Asher, 1988). We will explore the significance of these returns in our discussion. Respondents worked in a wide array of industries, were at mid- and upper-levels in their workplaces, and the organizations they represented ranged from small service franchises to multinational corporations, as shown in Figures 1, 2, and 3.

Coding

A research question emerging before Stage 1 considered whether our technical and business writing curricula aligned with or surpassed the composition and communication requirements of the workplaces that would most likely employ our graduates. Given our students' value of workplace-transferrable schooling, we measured respondents' feedback about the "types of writing" done in the workplace with a coding system reflective of the type of schooling our students would receive. We thus coded genre responses with

Figure 1. Industries represented amongst study participants

Field/Industry	Count	Percentage of Total
Aerospace/Transportation	3	9%
Banking/Finance/Accounting	6	19%
Insurance/Real Estate/Legal	2	6%
Medical/Dental/Healthcare	2	6%
Construction/Architecture/Engineering/Landscape	3	9%
Education	7	23%
Energy/Chemicals	3	9%
NonProfit/Services/Government	5	16%
Journalism/Media	1	3%
Total Responses (Combining Interview and Survey)	32	100%

Figure 2. Title or rank of survey and interview respondents

Title/Rank	Count	Percentage of Total
CEO/CFO/President/Partner/Owner	6	19%
Director	6	19%
Manager/Supervisor	9	28%
Human Resources Manager	5	16%
Recruiter	3	9%
Independent Consultant/Specialist	3	9%
Total Responses (Combining Interview and Survey)	32	100%

Figure 3. Size of corporations represented amongst participants

Total Number of Employees	Count	Percentage of Total
Less than 10	4	13%
10-49	4	13%
50-99	4	13%
100-499	7	22%
500-999	1	3%
1,000-4,999	7	21%
5,000-9,999	3	9%
10,000 or more	2	6%
Total Responses (Combining Interview and Survey)	32	100%

the corresponding genre chapter in Markel's *Technical Communication* (2015), Bedford-St. Martin's bestselling tech/comm text. Markel's (2015) text promises that it will "give you all of the tools you need to excel at workplace writing" (from the back cover). Markel's twenty-one chapter textbook has seven chapters specifically devoted to individual writing genres, hence seven potential codes for the second stage of our study: Correspondence (letters, memos, and emails); Job application materials; Proposals, Informational reports; Recommendation reports; Lab reports; Definitions, descriptions, and instructions; Oral presentations. Indeed, Markel's *Technical Communication* teaches the same content as that which is found in other technical and business communication textbooks, and its use of genre as a chapter structuring scheme is typical that which is found in other textbooks on technical communication.

Results

Given that our research questions considered the future employment of our graduating student body, we opted to focus our analysis on the value of writing in local workplaces and the genres that graduates would most likely encounter at those job sites. Our focus in this section is, therefore, to outline the most salient results regarding the likely agents of workplace writing; the impact of employees' writing quality on their hiring, tenure, and promotion; and the most typical genres and conventions used in our local market.

Who Does the Writing at Work?

As indicated in Figure 4, all salaried employees have implicit or explicit job descriptions that include writing. As high as nineteen respondents (73%) indicated that their respective companies require greater than three-quarters of salaried employees to produce formal workplace writing, as defined as technical reports, memos, annual reports, or external communications. Conversely, only three respondents (12%) indicated that approximately one quarter of their respective salaried workforces are required to produce written communication as either a function or product of their jobs. However, not a single respondent suggested that any salaried employee avoids the necessity of writing in the workplace.

Genre Chameleon

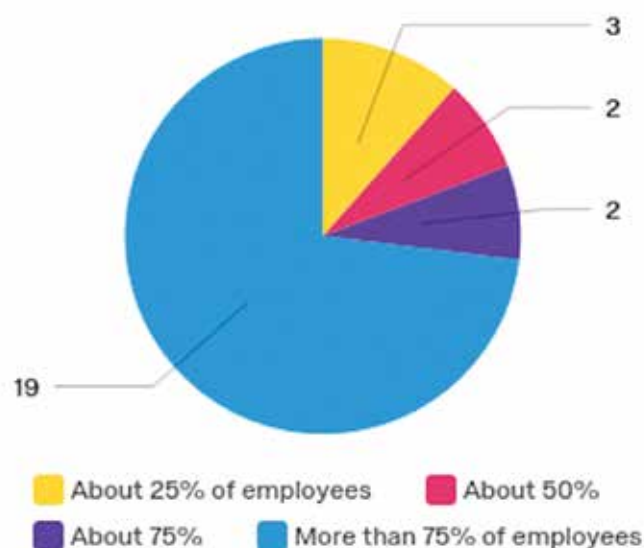


Figure 4. Respondent-indicated percentage of salaried employees with writing/communication responsibilities

Hourly employees are also tasked with the responsibility of writing, but not to the same extent as salaried workforces. As shown in Figure 5, five (37%) respondents indicated that 25% or less of their hourly workforce is not responsible for formal written communication. However, fourteen (63%) respondents indicated that half or more of their hourly employees are expected to produce formal workplace writing.

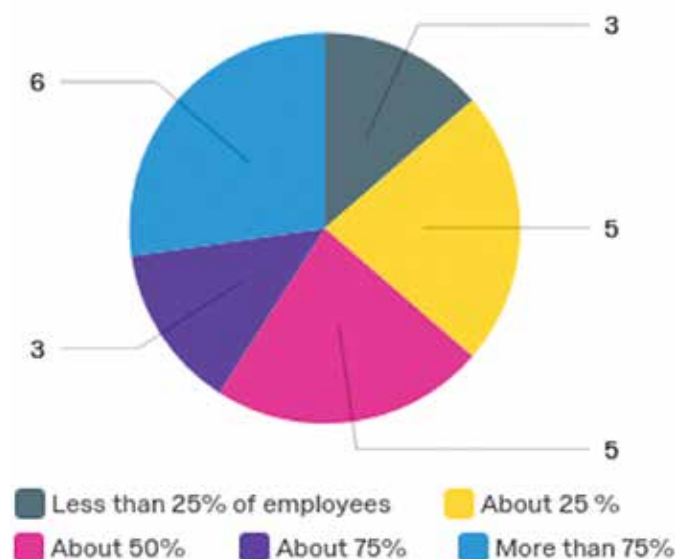


Figure 5. Respondent-indicated percentage of hourly employees with writing/communication responsibilities

What is the Impact of Writing on Job Acquisition and Promotion?

All surveyed employers and supervisory employees took seriously the writing abilities of prospective hourly and professional employees. Over two-thirds (69%) of those surveyed indicate that the quality of new hires' writing is formally evaluated with either a test, writing sample, or review of coursework; eight (31%) respondents use only job materials to make their assessments, despite their obvious limitation as a measure of good writing, a flaw made clear by one of our interviewees: "it is easy [for prospective employees] to get help with [writing] them."

Only one (4%) of those surveyed devotes only occasional time and attention to the communication skills of all that participant's salaried employees. However, the vast majority of respondents (24 out of 26 or 92%) affirm that prospective *professional/salaried* employees are "almost always" adversely affected by poorly written materials, while the one remaining respondent checked the "frequently" box. Nine respondents (36%) claim that prospective *hourly* employees would "almost always" be adversely affected, while thirteen (52%) of surveyed employers state that prospective hourly workers would "frequently" be affected.

Respondents defined "poor writing" in prospective and new hires in a variety of ways: Eleven (44%) considered poor writing to be a lack of sentence-level skills; seven (28%) claim it is a lack of audience awareness (questionable formality); four respondents (16%) identified poor writing as the failure to understand logical organizational strategies; and two participants (8%) noted that poor writing tends to be the misunderstandings of proper formatting and modes for communication. Nevertheless, interview data reveal that senior workers and employers often overlap two or more of these problematic areas. For example, a clinical psychologist interviewed in Stage 1 recalled a time when materials written by her intern were thrown out "because they were so disorganized" (logical organizational strategies). She went on to claim that "[new hires] need to be aware of who they're writing for," which suggests that audience awareness may be the ultimate issue for prospective and recent hires.

The same clinical psychologist revealed in her reflection of the intern what our quantitative data demonstrated clearly in Stage 2: "Good writing"

has many characteristics, including accuracy, clarity, conciseness, technical precision, visual appeal, and sentence level features (spelling, punctuation, and grammar). There is no evidence to show that “good writing” is simply grammatical prowess; rather, it is the interplay of several facets. As shown in Figure 6 below, the majority of respondents believe that each characteristic of good writing is “extremely important” in equal measure, with the exception of conciseness, technical precision, and visual appeal, which still retain relatively high esteem as “very important” and “moderately important.”

The ability to produce “good writing” in all areas is clearly important to senior colleagues and employers; and this skill continues to be valued when promotion and tenure decisions are being made. As indicated in Figure 7, effective formal communication skills are taken into consideration when making promotion decisions for hourly and professional employees alike. Sixteen (67%) respondents declared that local professional/salaried employees’ demonstration of effective formal communication is “essential” to an employee’s ability to move up in the workplace hierarchy, and seven (27%) claim that it is taken into consideration “a lot.” Only 2 (8%) respondents claimed that effective communication is only “somewhat” important for professional/salaried employees’ advancement.

Hourly workers’ professional advancement is not as dependent upon effective communication skills: Only five (21%) respondents claimed that effective communication skills are “essential” for institutional advancement and nine (38%) stated that such skills were taken into consideration a lot. The largest number of respondents, ten (42%), selected “somewhat,” thereby suggesting that effective communication is occasionally taken into consideration when promotion decisions are being made for hourly workers. In all, the data reveal that effective communication is generally tied to institutional advancement for all workers, but salaried workers in particular.

Which Genres are Commonly Used at Work?

Technical and business communication textbooks teach writing according to genre, with the most attention being paid in individual chapters for proposals, informational reports, recommendation reports, lab reports, job application materials, and

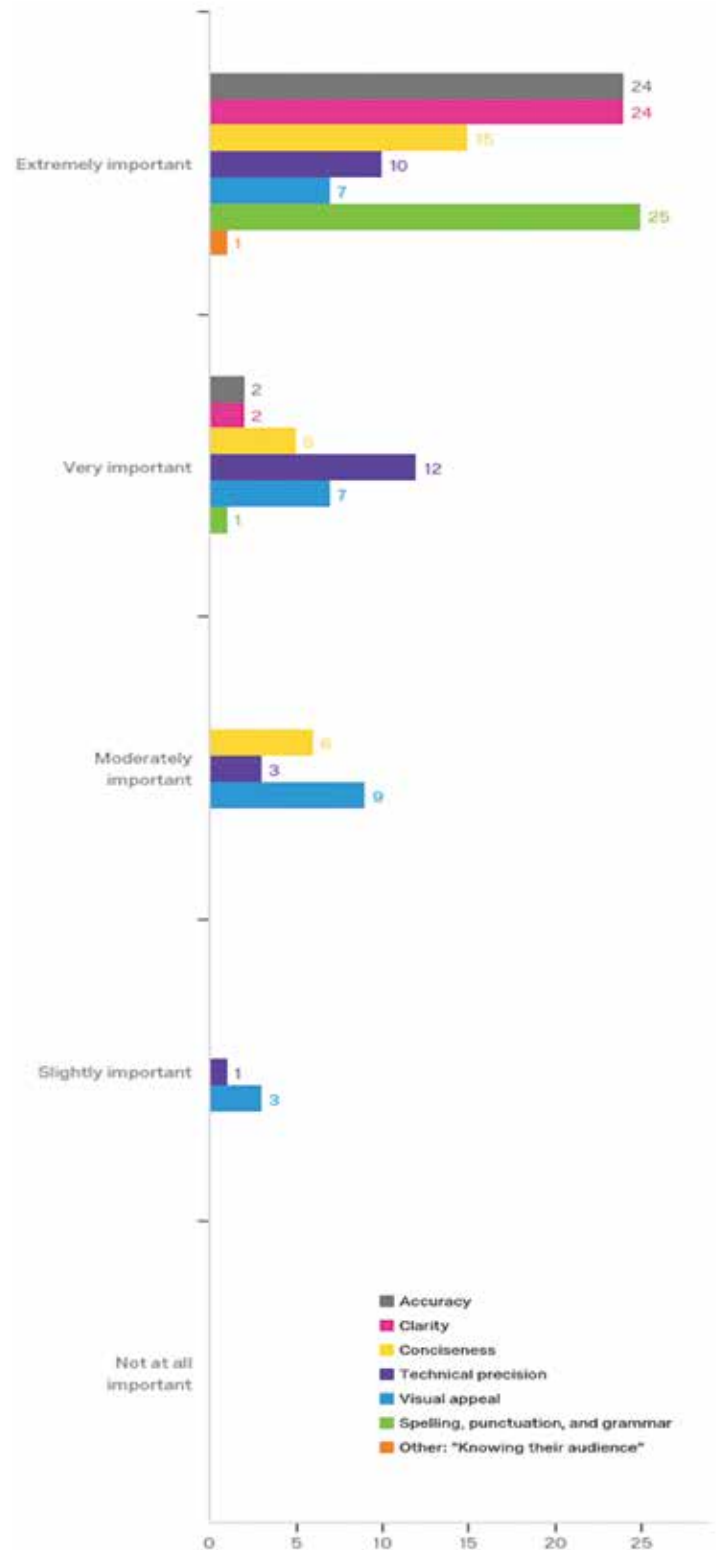


Figure 6. Respondents’ ranking of perceived workplace value of writing characteristics

Genre Chameleon

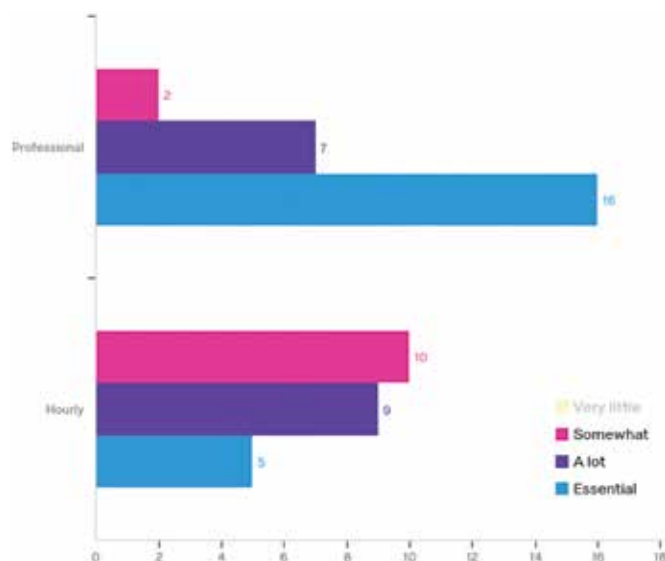


Figure 7. Respondents' ranking of the importance of effective written communication for promotion decisions

correspondence. To answer this research question, and to move toward an understanding of the vocabulary workplace experts used, we asked respondents to list the types of writing performed, both daily and regularly, but less frequently, in their own words (see Appendix B, survey questions 1 and 2). In addition, we asked respondents to indicate how often specific genres were used (see Appendix B, survey question 8). In combining the data from all three questions, our findings show that workplace writing tends to use all genres, but to varying degrees. For instance, the majority of

respondents (58%, or 15 respondents) report that social media posts are “almost never” or only “occasionally” the responsibility of the average worker (see Figure 8). However, as is shown in Figure 9, a word cloud representing popular responses to the question of types of writing employees are expected to produce on a daily basis, email is named most frequently. (See Appendix C for specific word counts to support word clouds.)

Later in the survey, when we named the genres explicitly and asked how frequently various genres were used, the true ubiquity of email was revealed. Responses to this question echo the first: 100% of respondents indicated email is used “almost always” in daily work (see Figure 8). No other genre comes close to the popularity of email as a workplace writing product. Report writing is the closest genre in popularity, with ten (38%) respondents indicating informational report writing is “almost always” used. But it is named less frequently by respondents when asked to use their own words, and then more often as a type of writing done by employees on a regular, but periodic, basis (see Figure 10 and Appendix C).

Limitations

According to Sheehan (2001), emailed survey requests have had decreasing response rates since 1986. Fan and Yan (2010) point to the “increasing use of spamming filters” (p. 134) as one possible cause of lower response rates of digital surveys in comparison to other collection

#	Field	Almost never		Occasionally		Frequently		Almost always		Total
2	E-mail	0%	0	0%	0	0%	0	100%	25	25
7	Formal reports	0%	0	42%	11	35%	9	23%	6	26
6	Informal reports	0%	0	23%	6	38%	10	38%	10	26
3	Internal and external correspondence (e.g. Memos and Letters)	0%	0	15%	4	42%	11	42%	11	26
5	Oral presentations without slides/visuals	0%	0	54%	14	35%	9	12%	3	26
4	Oral presentations with slides /visuals	4%	1	46%	12	38%	10	12%	3	26
1	Social Media	27%	7	31%	8	19%	5	23%	6	26
8	Technical reports	4%	1	42%	11	42%	11	12%	3	26

Figure 8. Count of respondents ranking frequency use of researcher-specified writing genres



Figure 9. Respondent-provided word frequency for daily types of workplace writing



Figure 10. Respondent-provided word frequency for occasional types of writing at work

methods, such as snail mail and telephone. The original NCW survey, which is widely regarded as well-designed and executed, mailed a traditional paper questionnaire to a selected group of 120 human resource managers, to whom they were able to telephone or email reminders. Hohwü et al. (2013) reveal that paper questionnaires, while expensive and labor intensive, nonetheless receive a higher return rate than Web-based surveys. Fan & Yan (2010) suggest use of mixed mode surveys to “combine the strengths of each mode” (p. 135). Limited by

funding, time, and manpower, paper was not an option for this study. We were also at the mercy of privacy regulations within our own university, which thwarted direct access to the email list, via which we may have sent reminders after two days as recommended by Crawford et al. (2001).

Our survey response rate (.032) can be considered statistically insignificant, largely, because we cast a wide net, had limited reminder opportunities, and likely met with the interference of spam filters: We sent out approximately 1,000 surveys, making only two calls within four weeks, and 210 bounced back due to incorrect addresses. We cannot know how many of the remaining 790 were intercepted by spam filters—many of our targets were security-conscious energy corporations and government agencies. However, our interviews reinforce our survey data. Thus, we feel confident that even if we collected more survey responses, we would yield similar results to those presented here. Nonetheless, if future researchers repeat this methodology, we recommend finding a way to increase the response rate, perhaps by providing incentives, reminding participants promptly after the initial call, or distributing the survey with a mixed mode approach, so as to side-step spam filters.

Discussion

Chameleon Genre

In the effort to answer questions about our own regional workplaces so that we might transfer that knowledge to the classroom, we found trends that apply much more broadly. Our research shows that writing is essential in the workplace for salaried and unsalaried workers, alike; and it travels with employees at every stage of their careers.

Recall that our survey repeats many of the same questions asked in the NCW study but also accounts for 2017 genre expectations and modern infrastructures of writing. Effective writing and communication plays a large role in hiring and promotion decisions, indeed. Specifically, our study shows that what NCW found in 2004 still holds, sometimes with remarkable similarities or even greater impact. For example, in the 2004 survey, more than two-thirds of salaried employees had some responsibility for writing as part of their regular job requirements. Whereas, 82% of our respondents

Genre Chameleon

stated that three-quarters or more of salaried employees “have job descriptions with responsibility for writing/communication” (Q. 4, Appendix B). Similarly, while 86% of the 2004 respondents said poorly written job materials would negatively affect the hiring process, 92% of our respondents said the same (Q. 5, Appendix B). This illustrates that while writing is valued highly for landing a good job across the country, in our local marketplace today, writing is even more essential to getting a career off to a good start.

We found writing has a greater impact on long-term success in our local marketplace as well. While the 2004 business leaders said writing plays a role in promotion decisions for more than 50% of responding companies, 64% of our participants said writing was “essential” to promotion and another 28% said it mattered “a lot” (Q. 10, Appendix B). Clearly, writing well is highly important to Houston-area businesses.

Perhaps more interesting than the impact of writing ability on one’s chances for hire and promotion, though—which, if we are honest, is quite intuitive—is that our research raises questions about genre and threshold concepts in professional writing courses, or, rather, the disconnect in genre and threshold concepts between college writing assignments and on-the-job writing. Therefore, the remainder of our discussion will attempt to unravel the observations of our survey and interview participants by focusing on the relevance and transfer of composition curriculum to the workplace and, by extension, what we argue is the (mis)handling of writing as a component of workplace culture.

Are We Teaching the Right Things?

As noted by Knisely and Knisely (2015) and others, our study further illuminated the harsh reality where new hires often are perceived as generally technically proficient but communicatively incompetent. Our interview data explained that the primary complaint from employers and senior employees is that recent graduates “don’t sound professional” in their emails and that recent graduates do not consider their audience (though these aren’t the words employers are using). Recall that the AAC&U report (2015) found only 27% of employers felt students were well prepared in written communication.

As would be expected, a significant portion of our respondents focused on grammar, usage, and spelling. (We, and many readers, would argue grammar, usage,

and spelling are themselves audience-specific.) However, more than half of the respondents highlighted matters related to genre, audience, and/or revision. And there were a few that succinctly observed literacy conflicts in genres. For example, one respondent quipped, “[New hires] tend to write a letter in the form of very informal text mode, not utilizing proper grammar and punctuation. Text and email has taken the place of a proper letter or memo” (Q. 12, Appendix B). Given the sheer volume of times email is named amongst survey and interview respondents, we wonder whether what we are witnessing is the chameleon nature of a hybrid genre. Indeed, these days, email, texting, and instant messaging can be used interchangeably on multiple mobile devices for one conversation. We find our own work style does exactly this, where one conversation might be started in an email, continue via text, and conclude in the instant messaging function in Google Docs or Skype.

Conrad (2017) observed the physical differences between the written communication of professional engineers in comparison to engineering students and found that students struggled with genre conventions, grammar and usage, and the characteristics of effective writing more generally. Recall that Smart (1993) argued “the community invents the genres it needs for creating written knowledge” (pp. 124–125). And, indeed, genres are fluid and site or community-specific. We argue email is the most fluid of them all, which is at once a genre of its own, a mode of communication, dialogic, and a delivery device for other genres (such as a PDF of a report or an Excel spreadsheet). Remley (2014) suggests “a literacy conflict occurs when communication practices used in the workplace appear to compete with cultural perceptions of which skills ought to be valued” (p. 5). The reality is that every industry, and perhaps every company or organization, uses email differently. But they all use it.

Indeed, the NCW study, *Writing: A Ticket to Work, or a Ticket Out*, pointed out the ubiquity of email way back in 2004. Thirteen years later, it’s only more so. And yet, according to participants in our study, new graduates still don’t seem to have a handle on the changeable reptile. This indicates either that we’ve been teaching “email as genre” wrong or that the employers are misperceiving as “error” what is instead new hires’ ignorance of the company’s writing culture (norms/mores). Or maybe both, resulting in a literacy conflict.

We can find evidence for the field's incorrect teaching of email by simply looking at the disparity in importance that email is given by composition instructors, relative to its mention by workplace respondents. While email is the genre identified by 100% of respondents as "almost always" used in workplace writing, and it is repeatedly invoked by interviewees who have been asked to recall salient experiences involving communication at work, those of us teaching and writing about technical and business communication tend to treat the email genre as an aside, a mere sub-genre of correspondence. This trend is noticeable and arguably perpetuated by several bestselling textbooks in technical & business communication, which provide email instruction in a few pages, within the same space they make for memos, letters, and, increasingly, text messaging. For instance, Markel's *Business & Technical Communication* devotes three pages to email, with content focused on netiquette and an activity devoted to following netiquette in an email. In all fairness, more email training accompanies the textbook on its Launchpad site, though not everyone can be counted upon to use that website. An exception, and one that may be more typical of textbooks looking forward, is Lannon and Gurak's (2017) *Technical Communication*, now in its fourteenth edition, which has eleven chapters devoted to various genres, with a standout chapter on email and text messaging. However, the most easily retrievable texts from academic presses still teach email as a subgenre of correspondence, such as Thill and Bovee (2017), *Excellence in Business Communication*; Oliu, Brusaw, and Alrad (2016), *Writing That Works: Communicating Effectively on the Job*; and Searles (2017), *Workplace Communications: The Basics*. Such treatment is likely a holdover from a bygone era, when the form and function of email had less permeable boundaries.

Yet our data suggest that the boundaries of workplace email appear to be changing, moving outward, and possibly disappearing altogether, since our respondents indicate that email does the work of many genres. However, it seems composition instructors are not generally teaching students the chameleon ways of this electronic medium. We are relatively certain that many composition instructors, ourselves included, tend to design our courses by taking major cues from our textbook adoptions, often teaching material in the order and proportion it is handled in our chosen

materials. If that is true, and we suspect it is, then educators are certainly not teaching email "correctly." After all, instructors may suggest that email has several functions, as Markel (2015) mentions briefly in a chapter on informational reporting (p. 446). However, if instructors use textbooks for their instructional cues, as mentioned above, then they are presumably not teaching that email may often be doing the work of other taught genres.

To borrow terms from linguistics, educators may be teaching that email has a prescribed grammar, a set of rules for its form and function that should be deployed in all events. Educators affirm the value of proper mechanics, grammar, and spelling but tend to consider email more informal than the other genres taught, such as reports and presentations. However, in the workplace, email does not follow prescribed rules from textbooks; it has a new, descriptive grammar, altogether—a set of rules deployed in individual workplaces that may not carry over to the next employer. So, this article proposes that email should be taught as what we have termed a chameleon genre, a genre that does whatever its users want it to do.

Family Chamaeleonidae

Therein lies the rub: Industry insiders know the descriptive genre conventions; they know that an email can be formal or informal, reporting high-stakes proprietary information or simply asking someone out for lunch. Senior workers know how to wield email for their purposes, and they know what is normative in their workplace. However, our research indicates no one appears to be teaching this information to the new hires, yet new hires are held accountable for their "laziness" according to one respondent, their "boneheaded mistakes," according to another, and "email responses that [use] 'text' speech," according to a third. This same last respondent warned prospective employees: "If you can't compose a formal email, we can not move forward." Clearly, new hires' emails are a mess. Our research suggests that composition instructors are not teaching email correctly for today's workplaces. But the problem may also lay in the teaching of workplace culture, which happens on the job. We suspect that senior workers do not "name what they know," to borrow concepts from Adler-Kassner and Wardle (2015), so they cannot teach these important concepts during onboarding of their new hires.

Genre Chameleon

According to Ray Land's (2015) preface to Adler-Kassner and Wardle's *Naming What We Know*, writing "can never stop outside of culture" (p. xii). The book, as the title suggests, lists and describes the knowledge the discipline of Writing Studies has accumulated so far. Specifically, the text defines the "threshold concepts" of our discipline. Originated by Cousin (2006) as a means of understanding effective teaching and learning in the UK, and extended to the field of economics by Meyer and Land (2006), "threshold concepts are concepts critical for continued learning and participation in an area or within a community of practice" (Adler-Kassner & Wardle, 2015, p. 2). The characteristics of threshold concepts, as described in *Naming What We Know*, are as follows:

- Threshold concepts are *transformative*, changing the learner's perception of self and the world.
- Once learned, they are "*irreversible*" and unforgettable. In other words, once known they cannot be unknown and it would be difficult to remember not knowing.
- Threshold concepts are *integrative* and create connections for the learner.
- At first, they are often "alien" or *counterintuitive* and hard for the learner to grasp (p. 2).

In short, mastery of threshold concepts is what distinguishes the expert from the novice within a community of practice.

Of the thirty-seven threshold concepts of writing studies, number fourteen is "Genres are enacted by writers and readers." Hart-Davidson (2015) reminds us "genres are constructions of groups over time usually with the implicit or explicit sanction of *organizational* or *institutional* power" (in Adler-Kassner and Wardle's *Naming What We Know*, p. 40, emphasis added) and that "genres are habitual responses to recurring socially bounded situations" (p. 39). Hart-Davidson goes on to assert "genres are only *relatively* stable. Generic forms are open to hybridization and change over time" (p. 40, emphasis in the original). Yet, as is indicated above, textbooks continue to teach workplace genres as stable, fixed sets of conventions. This is especially problematic when it comes to email.

The participants in our study are each members of distinct communities of practice (CoP). And each of those CoPs has its own discourse, its own corpus of knowledge, its own genre conventions. Imagine,

for a moment, the various workplace cultures of our individual respondents and how they have each evolved. Each new member acclimates to the company culture slowly over time, until she or he is no longer a novice but an expert within the CoP. If the theory of threshold concepts holds true, each of these new members encountered new ideas that were transformative, irreversible, integrative, and, at first, counterintuitive. But now that they have mastered them, our participants are unlikely to remember not knowing these threshold concepts within the community of practice. They are likely not cognizant of how much their own process of membership has shaped the values of the CoP today.

Professionals in the businesses surveyed may understand that other aspects of company culture take time to learn and may not expect new hires to automatically sign up for the company softball team or remember the core mission of "accountability first." Writing studies professionals know communication practices are an integral part of work culture. Yet, writing, and more importantly what is defined as "good writing," is not generally understood by our participants (or American society at large for that matter) as the complex, context-specific, cultural learning process that is well documented in *Naming What We Know* and by decades of writing studies research. We see evidence of this contradiction in stories told by our participants.

And as evidence of where our burden truly lies, one respondent wrote, "Universally, entry level staff write poorly. This is a problem with our entire education system starting with elementary school, but needs to be fixed before students are released from college." This respondent is seemingly unaware that genres are constructed by CoPs with "the implicit or explicit sanction of organizational or institutional power" (Hart-Davidson, 2015, p. 40). A new hire would have to learn the specific genre conventions of his or her institution regardless of his or her writing strengths or weaknesses upon "release" from college, just as this respondent did, though, likely, he or she no longer remembers. The respondent also doesn't appear to recognize or acknowledge how writing has changed over time within and without the institution. As such, the writing mistakes of new hires are perhaps misinterpreted as lack of training, knowledge error, or unskilled writing. The novice must adapt to the company writing culture and learn the communicative threshold concepts, in much the same way he or she

must adapt to the company culture at large. And he or she must continue to do so as the genre conventions within that company evolve over time.

Conclusion

Email as genre is sticky at best. Perhaps because of its electronic nature, there seems to be a transfer of texting language to email, speech conventions to the written form (Gillearts, 2012). And if the use and specific conventions of email signatures vary by profession and organization (Rains & Young, 2006), imagine the cultural variances between salutations, closings, subject lines, attachments, and body content. Email is the quintessential generic hybrid genre, or as the authors of this article think of it, a chameleon genre, capable of masquerading as other genres as the rhetorical situation demands. For example, an email can be a report or simply deliver a report; it can be a proposal or simply deliver a proposal. Email can be persuasive or narrative or informative; it can be conversational or formal; it can pick up where other communication modes have dropped off. As the present study has shown, email can do all of that and more. Though we, as composition instructors, are not showing the intricacies of this hybrid genre to our students—the very people who will enter the workforce and be labeled incompetent, lest we, and presumably other instructors beyond our campus, revise our approach to the teaching of genre. After all, we are not teaching email as a chameleon genre, and our textbooks certainly are not either.

In closing, our study answers our first two research questions rather convincingly, finding that writing skills are quite important to the local job market, and perceived writing ability is essential to promotion and tenure amongst local companies, even more so than it was when the NCW completed their report. In seeking to learn whether we were teaching the right things, we found that educators may be teaching genre conventions too rigidly and not spending enough time highlighting the chameleon nature of email, specifically. Area employers value knowledge of genre conventions, but perhaps do not value, or are unaware, that those conventions vary from one worksite to another. Local employers do not use the same language used by practitioners and educators to talk about writing, which made it difficult to tease out what really mattered to them. Interviews, and the ability to follow-up with

those respondents, made this easier than the survey alone would have. Still, we find that transitions for new employees might be made easier if composition instructors spend some time explaining how employers might name or perceive various conventions and prepare students for the amount of adaptation that will be necessary, not just once they land their first job but as they move from one workplace to another over the course of their careers. Finally, our plan, then, is to adjust our own professional writing curriculum to more accurately align with the expectations of our students' future employers and use respondent data to directly illustrate these points. Further, the authors believe professional and technical writing instructors would do well to prepare students for the chameleon nature of workplace email expectations. In addition, we plan to encourage our local employment sites to name their own conventions more explicitly, by including sample company documents in hiring materials, thereby recognizing writing is far more than a stable skill to be learned sometime prior to graduation. In the classroom, we will encourage our students to identify the role of writing in an evolving workplace culture, and we call upon the workplace experts to both name what they know about their own evolving workplace writing and to share that information with their new hires as a facet of workplace culture.

References

- AAC&U. (2015). *Falling short? College learning and career success*. Association of American Colleges & Universities. Retrieved from <http://search.proquest.com/openview/5d0808413f83319ebb94e24eac5c91f8/1?pq-origsite=gscholar&cbl=35401>
- Adler-Kassner, L. (2014). Liberal learning, professional training, and disciplinarity in the age of educational "reform": Remodeling general education. *College English*, 76(5), 436–457.
- Adler-Kassner, L., & Wardle, E. (2015). *Naming what we know: Threshold concepts of writing studies*. Logan, UT: Utah State University Press.
- AlAfnan, M. A. (2015). Language use in computer-mediated communication: An investigation into the genre of workplace emails. *International Journal of Education and Literacy Studies*, 3(1), 1–11.
- Anson, C. M., & Forsberg, L. L. (1990). Moving beyond the academic community: Transitional

Genre Chameleon

- stages in professional writing. *Written Communication*, 7, 200–231.
- Bargiela-Chiappini, F., & Nickerson, C. (Eds.). (1999). *Writing business: Genres, media, and discourses*. Harlow, UK; New York: Longman.
- Bednarz. (2012, Oct. 9). Hiring preferences favor mature workers over Millennials: Study: Mature workers need more tech know-how, and Millennials need to improve their writing skills, hiring managers told Adecco Staffing. *Network World Online*. Retrieved from <https://search-proquest-com.libproxy.uhcl.edu/docview/1112039386?OpenUrlRefId=info:xri/sid:summon&accountid=7108>
- Brandt, D. (2001). *Literacy in American lives*. Cambridge, UK: Cambridge University Press. <https://doi.org/10.1017/CBO9780511810237>
- Bush-Bacelis, J. L. (1998). Innovative pedagogy: Academic service-learning for business communication. *Business Communication Quarterly*, 61(3), 20–34.
- Conrad, S. (2017). A comparison of practitioner and student writing in civil engineering: Practitioner and student civil engineering writing. *Journal of Engineering Education*, 106(2), 191–217. <https://doi.org/10.1002/jee.20161>
- Cousin, G. (2006). An introduction to threshold concepts. *Planet*, 17, 4–5.
- Cox, M., Ortmeier-Hooper, C., & Tirabassi, K. E. (2009). Teaching Writing for the “Real World”: Community and Workplace Writing. *The English Journal*, 98(5), 72–80.
- Crawford, S. D., Couper, M. P., & Lamias, M. J. (2001). Web surveys: Perceptions of burden. *Social Science Computer Review*, 19(2), 146–162.
- Dannels, D. (2003). Teaching and learning design presentations in engineering: Contradictions between academic and workplace activity systems. *Journal of Business Technical Communication*, 17, 139–169.
- Davies, C., & Birbili, M. (2000). What do people need to know about writing in order to write in their jobs? *British Journal of Educational Studies*, 48(4), 429–445.
- Dubinsky, J., & Bowdon, M. (2005). Introduction: Service-learning and professional communication. *Reflections: A Journal of Writing, Service-Learning, and Community Literacy*, 4(2), 2–8.
- Elbow, P. (2012). *Vernacular eloquence: what speech can bring to writing*. Oxford, UK; New York, NY: Oxford University Press. Retrieved from <http://site.ebrary.com/id/10518266>
- Facts and Figures. (2017). Retrieved from <http://www.houstontx.gov/about/houston/houstonfacts.html>
- Fan, W., & Yan, Z. Factors affecting response rates of the web survey: A systematic review. *Computers in Human Behavior*, 26(2), 132–139.
- Freedman, A., Adam, C., & Smart, G. (1994). Wearing suits to class: Simulating genres and simulations as genre. *Written Communication*, 11(2), 193–226.
- Gillearts, P. (2012). Email use in a Belgian company: Looking for the hybridity of the genre. In *Researching Discourse in Business Genres* (pp. 15–31). Peter Lang AG, Internationaler Verlag der Wissenschaften.
- Giltrow, J., & Stein, D. (2009). *Genres in the Internet*. Philadelphia, PA: John Benjamins Publishing Company.
- Greene, B. (2004). *Get the interview every time: Fortune 500 hiring professionals' tips for writing winning resumes and cover letters*. Chicago, IL: Dearborn Trade Publishing.
- Gubrium, J. F., & Holstein, J. A. (2001). *Handbook of interview research: Context & method*. Thousand Oaks, CA: Sage.
- Handley, K., Sturdy, A., Fincham, R., & Clark, T. (2006). Within and beyond communities of practice: Making sense of learning through participation, identity and practice. *Journal of Management Studies*, 43(3), 641–653. <https://doi.org/10.1111/j.1467-6486.2006.00605.x>
- Hart-Davidson. (2015). Genres are enacted by writers and readers. In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: threshold concepts of writing studies* (pp. 39–40). Logan, UT: Utah State University Press.
- Horner, B. (2013). Ideologies of literacy, “academic literacies,” and composition studies. *Literacy in Composition Studies*, 1(1), 1–9. <https://doi.org/10.21623/1.1.1.2>
- Hohwü, L., Lyshol, H., Gissler, M., Jonsson, S. H., Petzold, M., & Obel, C. (2013). Web-Based Versus Traditional Paper Questionnaires: A Mixed-Mode Survey with a Nordic Perspective. *Journal of Medical Internet Research*, 15(8). <https://doi.org/10.2196/jmir.2595>

- Hull, G. (1993). Hearing other voices: A critical assessment of popular views on literacy and work. *Harvard Educational Review*, 63(1), 20–50. <https://doi.org/10.17763/haer.63.1.u0762m971p0645t4>
- Hull, G. A. (Ed.). (1997). *Changing work, changing workers: Critical perspectives on language, literacy, and skills*. Albany, NY: State University of New York Press.
- Knisely, C., & Knisely, K. (2015). *Engineering communication*. Stanford, CT: Cengage Learning.
- Kurtyka, F. (2015). “Get excited people!”: Gendered acts of literacy in a social sorority. *Literacy in Composition Studies*, 3(2), 22–43. <https://doi.org/10.21623/1.3.2.3>
- Land, R. (2015). Preface. In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: Threshold concepts of writing studies* (pp. xi–xiv). Logan, UT: Utah State University Press. Retrieved from <http://site.ebrary.com/id/11069097>
- Land, R., Meyer, J. H. F., & Flanagan, M. T. (2016). *Threshold concepts in practice*. Retrieved from <http://public.eblib.com/choice/publicfullrecord.aspx?p=4587056>
- Lannon, J. M., & Gurak, L. J. (2017). *Technical communication* (14th ed.). Boston, MA: Pearson.
- Lauer, J. M., & Asher, J. W. (1988). *Composition research: Empirical designs*. New York, NY: Oxford University Press.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK; New York, NY: Cambridge University Press.
- Markel, M. (2015). *Business & technical communication* (11th ed.). Boston, MA: Bedford/St. Martin's.
- Meloncon, L. (2012). Current overview of academic certificates in technical and professional communication in the United States. *Technical Communication*, 59, 207–222.
- Meyer, J., & Land, R. (Eds.). (2006). *Overcoming barriers to student understanding: Threshold concepts and troublesome knowledge*. London, UK; New York, NY: Routledge.
- Miller, C. R. (1984). Genre as social action. *Quarterly Journal of Speech*, 70(2), 151–167.
- National Commission on Writing. (2004). *Writing: A ticket to work... Or a ticket out: A survey of business leaders*. College Board.
- Nowacek, R. S. (2011). *Agents of integration: Understanding transfer as a rhetorical act*. Carbondale, IL: Southern Illinois University Press.
- Oliu, W. E., Brusaw, C. T., & Alred, G. J. (2016). *Writing that works: Communicating effectively on the job* (12th ed.). Boston, MA: Bedford/St. Martin's.
- Paretti, M. C. (2006). Audience awareness: Leveraging problem-based learning to teach workplace communication practices. *IEEE Transactions on Professional Communication*, 49, 189–198. <https://doi.org/10.1109/TPC.2006.875083>
- Rains, S. A., & Young, A. M. (2006). A sign of the times: An analysis of organizational members' email signatures. *Journal of Computer-Mediated Communication*, 11(4), 1046–1061. <https://doi.org/10.1111/j.1083-6101.2006.00307.x>
- Read, S., & Michaud, M. J. (2015). Writing about writing and the multimajor professional writing course. *College Composition and Communication*, 66(3), 427.
- Remley, D. (2014). *Exploding technical communication: Workplace literacy hierarchies and their implications for literacy sponsorship*. Amityville, NY: Baywood Publishing Company, Inc.
- Ross, D. G. (2009). Ars dictaminis perverted: The personal solicitation e-mail as a genre. *Journal of Technical Writing & Communication*, 39, 25–41. <https://doi.org/10.2190/TW.39.1.c>
- Russell, D. R. (1997). Rethinking genre in school and society: An activity theory analysis. *Written Communication*, 14, 504–554.
- Searles, G. J. (2017). *Workplace communications: The basics* (7th ed.). Boston, MA: Pearson.
- Sheehan, K. B. (2001). E-mail survey response rates: A review. *Journal of Computer-mediated Communication*, 6(2), n.p. doi: 10.1111/j.1083-6101.2001.tb00117.x
- Smart, G. (1993). Genre as community invention: A central bank's response to its executives' expectations as readers. In R. Spilka (Ed.), *Writing in the workplace: New research perspectives* (pp. 124–140). Carbondale, IL: Southern Illinois University Press.
- Spooner, M., & Yancey, K. (1996). Postings on a genre of email. *College Composition and Communication*, 47(2), 252–278. <https://doi.org/10.2307/358795>

Genre Chameleon

- Stone, E. (2000). Service learning in the introductory technical writing class: A perfect match? *Journal of Technical Writing & Communication*, 30, 385.
- Sunderland, J. (2004). *Gendered Discourses*. New York, NY: Palgrave MacMillan.
- Thill, J. V., & Bovee, C. (2016). *Excellence in Business Communication* (12th ed.). Boston, MA: Pearson.
- Valentine, C., Woodthorpe, K., & Easthope, L. (2013). Opportunities and barriers to forming a professional identity: Communities of practice within UK funeral directing. *Mortality*, 18(4), 358–375. <https://doi.org/10.1080/13576275.2013.852527>
- Viswamohan, A. I., Hadfield, C., & Hadfield, J. (2010). 'Dearest beloved one, I need your assistance': The rhetoric of spam mail. *ELT Journal*, 64(1), 85–94. <https://doi.org/10.1093/elt/ccp086>
- Winsor, D. A. (2000). Ordering work: Blue-collar literacy and the political nature of genre. *Written Communication*, 17, 155–184. <https://doi.org/10.1177/0741088300017002001>
- Yu, H. (2008). Contextualize technical writing assessment to better prepare students for workplace writing: Student-centered assessment instruments. *Journal of Technical Writing & Communication*, 38, 265–284. <https://doi.org/10.2190/TW.38.3.e>

About the Authors

Patricia Welsh Droz is Assistant Professor of Writing and Linguistics at University of Houston-Clear Lake, where she teaches first-year writing, writing for the social sciences, language & gender, and the sociolinguistics of writing. Since 2018, she and Dr. Jacobs have co-directed the UHCL First-Year Writing program. Patricia's research interests include gender and workplace communication, first-year writing, and computer-mediated discourse. She was the 2017–2018 co-recipient of the Marilyn Mieszkuc Professorship in Women's and Gender Studies for her corpus linguistic work on Hillary Clinton's secretary of state emails. She is available at droz@uhcl.edu.

Lorie Stagg Jacobs is Assistant Professor of Writing at University of Houston-Clear Lake, where she teaches first-year and professional writing courses. She is also the Writing Across the Curriculum/Writing in the Disciplines Coordinator, advancing development and leadership of writing-focused faculty professional development seminars campus-wide. She and Patricia are the current co-directors of First-Year Writing. Lorie's research interests include discipline- and profession-specific writing curriculum, labor issues in academia, first-year composition, and student persistence. She is available at jacobsl@uhcl.edu.

Manuscript received 21 August 2017, revised 10 November 2017; accepted 14 November 2017.

Appendix A: Stage 1: Interview Questions

1. What are the sorts of writing you do on a day-to-day basis?
2. What are the sorts of writing you do on a regular, but periodic basis?
3. When was the last time you developed /wrote a proposal for the workplace? Was it solicited, or unsolicited?
4. How often does your company produce (list of possible documents)? Then discuss those specific types of documents named.
5. If you were hiring a newly graduated UHCL Business major for an entry-level management position, what sort of writing would that person be expected to produce?
6. When hiring for any position in your firm, how much do applicant's communication skills play a role in your decision?
7. Does your company ever pay for training (or re-training) of communication skills? If so, how much \$\$ per yr? How much time do you spend correcting or addressing writing deficiencies?
8. Based on your personal knowledge of the most recently hired new graduates, what would you say is the most wide-spread "problem" with their written communication skills? Please describe. For example...
 - Understanding how audience and purpose shape communications
 - Understanding /using standard formats (letter, memo, report)
 - Understanding /using correct /best mediums for communications
 - Understanding /using standard organization strategies for delivering different types of news
 - Sentence-level skills (grammar, punctuation, etc.)
 - Other:
9. How important are written and oral communication skills in your hiring process?
10. How important are written and oral communication skills in promotion and tenure?

Demographics

1. Your position? (Only record level, such as "Director" rather than "Director of Sales.")
2. Are you ever charged with hiring of any positions? If so _____
3. Company size? - (See SBA.gov)

According to the SBA:

Manufacturing: Maximum number of employees may range from 500 to 1500

Wholesaling: Maximum number of employees may range from 100 to 500

Services: Annual receipts may not exceed \$2.5 to \$21.5 million

Retailing: Annual receipts may not exceed \$5.0 to \$21.0 million

General and Heavy Construction: Annual receipts may not exceed \$13.5 to \$17 million

Special Trade Construction: Annual receipts may not exceed \$7 million

Agriculture: Annual receipts may not exceed \$0.5 to \$9.0 million

[Source: SBA's definition of a small business concern]

Genre Chameleon

Appendix B: Stage 2: Workplace Writing Survey

Consent request

The Writing Program of State University, in cooperation with Career Services, seeks your input on writing in your workplace. We would like to understand the value of writing skills to employers and co-workers, and to what degree communication factors into employee productivity and advancement. We are especially interested in the opinions of employers and managers in the local economy. Your valuable feedback can help reinforce and shape our writing curriculum, which in turn will better prepare students for the writing and communication expectations of area businesses. At UHCL, preparing students for the demands of their future workplace is a top priority. We strive to revise and improve our curriculum to keep pace with a competitive job market. We may share the information we collect with university colleagues and administrators, other professionals in the field, at professional conferences, or publish it in aggregate. Your response is anonymous and no identifying information will be collected.

Please keep in mind your confidentiality will be kept to the degree permitted by the technology being used. No guarantees can be made regarding the interception of data sent via the Internet by any third parties. This survey should take only 10 to 15 minutes to complete. Please indicate your consent to participate below. Should you have any questions or comments on our research, please send inquiries to jacobsl@uhcl.edu. Thank you in advance for your help! Sincerely, Drs. Lorie Jacobs and Patricia Droz Assistant Professors of Writing University of Houston, Clear Lake

- ☐ I consent to participate and would like to continue to the survey. (1)
☐ I do not consent. (2)

[Skip To: End of Survey If = I do not consent. (2)]

Survey questions

Q1 What are the sorts of writing you do on a day-to-day basis?

Q2 What are the sorts of writing you do on a regular, but periodic basis?

Q3 If you were hiring a recent UHCL graduate for an entry-level position, what sort of writing would that person be expected to produce?

Q4 Whether stated implicitly or explicitly, how many employees in your company have job descriptions with responsibility for writing/communication (e.g. technical reports, memos, annual reports, external communications, etc.)?

	< 25% (1)	About 25 % (2)	About 50% (3)	About 75% (4)	> 75% (5)
Professional (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hourly (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q5 How often would poorly written application materials affect the hiring process?

	Almost never (1)	Occasionally (2)	Frequently (3)	Almost always (4)
Professional (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hourly (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q6 When hiring for a position that requires writing skills, how does your company usually assess an applicant's writing ability? (Please check all that apply)

- ☐ Writing sample provided by applicant (1)
- ☐ Writing test taken during interview (2)
- ☐ Review of coursework on resumé (3)
- ☐ Impressions based on cover letter /written application (4)
- ☐ Other (5) _____

Q7 Based on your personal knowledge of the typical recently hired new graduate, what would you say is the most wide-spread "problem" with written communication skills?

- ☐ Understanding how audience and purpose shape communications, such as level of formality or use of expected conventions. (1)
- ☐ Understanding /using the formats and modes (letter, memo, report, presentation, Tweet) expected for specific types of communication (2)
- ☐ Understanding /using logical organization strategies in communications. (3)
- ☐ Sentence-level skills (grammar, punctuation, etc.) (4)
- ☐ Other (5) _____

Q8 Please indicate how frequently each form of communication is used in your company.

	Almost never (1)	Occasionally (2)	Frequently (3)	Almost always (4)
Social Media (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E-mail (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internal and external correspondence (e.g. Memos and Letters) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Oral presentations with slides /visuals (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Oral presentations without slides/visuals (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Informational reports (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Formal reports (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technical reports (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q9 Effective written communication can have a number of different characteristics. In your company, how important are each of these characteristics?

	Extremely important (1)	Very important (2)	Moderately important (3)	Slightly important (4)	Not at all important (5)
Accuracy (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clarity (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conciseness (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technical precision (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visual appeal (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spelling, punctuation, and grammar (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Genre Chameleon

Q10 To what extent does your company take effective formal communication skills into consideration when making promotion decisions?

	Very little (1)	Somewhat (2)	A lot (3)	Essential (4)
Professional (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hourly (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q11 Share a story about a time someone's written or presentation skills were memorably great or memorably awful. What essential skill were they demonstrating or lacking?

Q12 If you could tell writing teachers one thing that new hires are doing well or poorly with their writing and communication, what would it be?

Q13 What is your organization's primary business activity? (Select one only)

- ☐ Aerospace (1)
- ☐ Banking /Finance /Accounting (2)
- ☐ Insurance /Real Estate /Legal (3)
- ☐ Federal Government (including military) (4)
- ☐ State /Local Government (5)
- ☐ Medical /Dental /Health care (6)
- ☐ Transportation /Utilities (7)
- ☐ Construction /Architecture/ Engineering (8)
- ☐ Wholesale /Retail/Distribution (9)
- ☐ Education (10)
- ☐ Research /Development Lab (11)
- ☐ Business Services /Consultant (12)
- ☐ Manufacturing (13)
- ☐ Wholesale and retail trade (14)
- ☐ Oil & Gas Industry (15)
- ☐ Services (16)
- ☐ Other (17) _____

Q14 Total number of employees inside the U.S. on January 1, 2017?

- ☐ < 10 (1)
- ☐ 10 - 19 (2)
- ☐ 20 - 49 (3)
- ☐ 50 - 99 (4)
- ☐ 100 - 499 (5)
- ☐ 500 - 999 (6)
- ☐ 1000 - 4,999 (7)
- ☐ 5,000 - 9,999 (8)
- ☐ > 10,000 (9)

Q15 On average, how many new employees were hired yearly inside the U.S. in the past 5 years? (January 2012 - present)

- ☐ < 10 (1)
- ☐ 10 - 19 (2)
- ☐ 20 - 49 (3)
- ☐ 50 - 99 (4)
- ☐ 100 - 499 (5)
- ☐ > 1,000 (6)

Q16 Total number of employees outside the U.S. on January 1, 2017?

- ☐ < 10 (1)
- ☐ 10 - 19 (2)
- ☐ 20 - 49 (3)
- ☐ 50 - 99 (4)
- ☐ 100 - 499 (5)
- ☐ 500 - 999 (6)
- ☐ 1,000 - 4,999 (7)
- ☐ 5,000 - 9,999 (8)
- ☐ > 10,000 (9)

Q17 On average, how many new employees were hired yearly outside the U.S. in the past 5 years? (January 2012 - present)

- ☐ < 10 (1)
- ☐ 10 - 19 (2)
- ☐ 20 - 49 (3)
- ☐ 50 - 99 (4)
- ☐ 100 - 499 (5)
- ☐ 500 - 999 (6)
- ☐ > 1,000 (7)

Q18 What is your primary job title? (Select one only)

- ☐ CEO /CFO / President (1)
- ☐ Vice President (2)
- ☐ Director (3)
- ☐ Manager (4)
- ☐ Internet manager (5)
- ☐ Human Resources Manager (6)
- ☐ E-Business (7)
- ☐ Webmaster/Web Developer (8)
- ☐ Supervisor (9)
- ☐ Technical Consultant (10)
- ☐ Recruiter (11)
- ☐ Other Management (12) _____
- ☐ Other Corporate Staff (13) _____
- ☐ Other Staff (14) _____

Genre Chameleon

Appendix C: Specific Genres Reported by Respondents

Figure 11. Genres reported by respondents as writing performed daily in response to Q1

Named genre frequency, Q.1	Count	Named by
Email	19	73%
Letters	8	31%
Definitions/ procedures/ manuals	7	27%
Reports	7	27%
Job descriptions/ performance evaluations	7	27%
Memos	4	15%
Marketing materials	3	12%
Social media	2	8%
Proposals	1	4%

Figure 12. Genres reported by respondents as writing performed regularly but less frequently

Named genre frequency, Q.2	Count	Named by
Reports	10	38%
Policy	7	27%
Correspondence	6	23%
Plans or procedures	6	23%
Job descriptions/ performance evaluations	5	19%
Letters	4	15%
Speeches or presentations	4	15%
Proposals	3	12%
Memos	3	12%
Marketing	2	8%
News/ announcements / white papers	2	8%
Email	1	4%

Hypertext Theory: Theoretical Foundations for Technical Communication in the 21st Century

By Craig Baehr and Susan Lang

Abstract

Purpose: As the field of Technical Communication adapts to changing conditions, new ways of describing the field are vital. This article discusses important characteristics of hypertext theory, developed over the last 70+ years, as a theoretical foundation that informs and defines the core competencies and practices of the field of technical communication.

Method: This article initially reviews the significant literature on hypertext theory as well as recent selections, which help situate or define technical communication in the 21st century. From this literature, we developed a framework to examine correlations between characteristics of hypertext theory and compared those to skills, processes, and products in technical communication.

Results: Hypertext is a foundational theory which informs the processes and practices of contemporary technical communication, and in particular, core competencies in developing content, design, structure, and in the processes of information development and user experience design. Given technological evolutions, technical communicators continue to work with content informed by hypertextual theories and practices, to create multi-pathed, user-driven, dynamic experiences.

Conclusions: Characteristics of hypertext theory have become essential parts of the core competencies required in the daily work of technical communicators. Furthermore, they can be used to describe our daily work as well as to help us frame professional development, certification programs, and identify as a field.

Keywords: hypertext theory, technical communication, core competencies

Practitioners' Takeaway:

- Specific characteristics of hypertext theory that inform technical communication include collaborative authoring, content focus, hyperlinking, hypermedia, intertextuality, and multi-path non-linear information modeling.
- Hypertext theory and its characteristics have influenced the development of the core competencies of technical communication as well as its wide range of products and practices, including how we create and manage content, design, structure, information development, and user experience.
- An understanding of hypertext theory as a foundational framework can help technical communicators learn and appropriate new communication tools, technologies, processes, and practices.
- Hypertext theory, as a theoretical foundation of technical communication, can help us, as professionals, better articulate our processes, practices, and professional identity as a field.

Hypertext Theory

As the field of technical communication has matured, we are constantly informed by newer theories, practices, and technologies that articulate and inform the value of the work we do. As our profession has expanded in its core competencies and roles, from technical writer to technical communicator, the nature of our work has been transformed from simple print-based writing and editing into developing information and content experiences for a wide range of users. However, our theoretical foundations have been just as influential in our evolution and have helped us articulate those core competencies, products, and processes.

Hypertext theory, which is invoked by those in fields as diverse as computer science and literature to discuss the alphanumeric, later multimodal texts built in both print and digital environments, has a close connection to technical communication. The definition of hypertext itself is deceptively simple; in computer science, it is simply text that acts as a link to other text, and the technology to enact this linking has been in existence since the 1960s; it became widely available to the public in Apple's HyperCard application in the 1980s. In parallel, in critical theory, hypertext theory/hypertextuality (though not all theorists use the specific term) describes texts that refer (and link) to other texts in terms of intellectual impact rather than physical presence or proximity (Barthes, 1974; Foucault, 1972; Genette, 1982). Hypertext theory, as written for the last 70+ years, contains close connections to poststructuralist and postmodern theories, and ultimately encompasses broader notions of content, collaboration, structure, design, and process in online and digital publications and environments (Bolter, 1991; Joyce, 1996; Landow, 1989, 1991, 1997, 2006; Moulthrop, 1991).

In addition to its larger cultural context, hypertext theory broadly informs the processes and practices of technical communicators in the 21st century. Hypertext theory's primary characteristics inform many of the products and specializations in the field and has the potential as a foundational theory that underpins the work of technical communicators. As one example of its relevance, hypertext theory, while conceived and executed in a period apparently dominated by waterfall development processes (linear, with clearly demarcated stages, and author-focused), in fact, called for what we today know as agile or iterative processes (non-linear, team-based, and involving users). Subsequent evolutions in technologies and processes have continued

to reinforce characteristics of hypertext theory as a significant influence in other aspects of technical communication, as well.

While scholarship about hypertext and hypertext theory has ebbed and flourished in technical communication publications, we see principles of hypertext theory at work in much of what practitioners in technical communicators do. At a time when we hear colleagues bemoan the fragmentation of technical communication as a coherent field (Hart-Davidson, 2001; Rude, 2009), we see hypertext theory as a useful framework for describing and understanding our field. In the following pages, therefore, we provide an overview of the history of hypertext and hypertext theory, including discussion of its key characteristics. Then, we discuss how these characteristics have informed and influenced technical communication, particularly in the areas of content, design, structure, information development, and user experience. And, finally, we discuss some potential impacts for the field and its future.

Characteristics Of Hypertext Theory

Despite the relative limitations of the available technology, media, and applications during its evolution as a theory in the 1980s and 1990s, the concepts of hypertext theory, as described by many writers over the years, have persisted and evolved in various forms of practice over the last several decades. Hypertext's underlying characteristics include collaborative authoring, content focus, hyperlinking, hypermedia, intertextuality, and multi-pathed (some would say non-linear) structures. As technical communicators continued to appropriate various authoring, communication, software tools, and applications, each of these characteristics continued to inform our collective methods and practices as a field. Many of these traits overlap and inform one another and have been appropriated into a wide range of specializations within technical communication. Each of these characteristics is defined and discussed within a technical communication context, below.

Collaborative Authoring

Initially, hypertext theorists (Bolter, 1991; Joyce, 1996; Landow, 1989) viewed collaboration as a way of elevating reader at the expense of the author—a

competitive aspect, initially. It was suggestive of an environment, though, that would encourage multi-authored works synchronously and/or asynchronously. Another precursor was the fact that an author could work in hypertext, hypermedia, or both. Early hypertext systems, both actual and conceptual, included the ability to share, code, comment, and link to content created by other authors (Bush, 1945; Nelson, 1965). Today, virtual team collaborative authoring can be done both asynchronously and synchronously, with many of the same features. Collaborative authoring tools (including wikis, meeting applications, social media tools, and cloud-based software programs) are commonly used in various combinations to produce and publish content. As such, technical communicators have adopted a wide range of collaborative authoring processes and practices as integral skills in the work they do.

Content-focused

Hypertext theory expanded the nature and capabilities of linear, print-based content beyond the idea of a single document comprising alphanumeric text and graphics. Early hypertext content included text chunks, or *lexias* (e.g. Barthes, 1974; Rosenberg, 1996), links, markup, visual media, and interstitial space (Joyce, 1996), which could be created independently and connected using various content authoring tools. Hypertext content suggested modular use (and reuse) within (and between) documents or systems (Bolter, 1991; Landow, 1997). Today, content has evolved similarly into multi-layered, multi-modal forms including complex combinations of reusable text, visuals, space, and media. Component content management is a widely used practice, in which content chunks (or units) are structured, tagged, and reused within content management systems. Within these systems, content is created and developed on a structural level (architectures), a semantic level (metadata), and a surface level (image, layout, text), and repurposed (and used) across an increasingly wide range of information products and platforms.

Hyperlink

The fundamental cognitive associative tool to help structure content and enable user-driven navigation within one or more hypertexts was the hyperlink, first labeled as such by Theodor Nelson (1965). By an associative tool, we mean that a hyperlink enabled

authors to create multi-pathed, user-driven reading experiences. Hyperlinks were essential in creating modular content which could be linked, repurposed, and reused. Conceptually, hyperlinks were also one of the first digital forms of content semantics, in that textual links formed keywords and linked two elements together, which suggested relatedness or relevance (Bolter, 1991; Landow, 1997). Today, hyperlinks allow technical communicators to point, associate, include, and connect content within the same document as well as virtually any other accessible documents, digital or online. Virtually every authoring tool integrates the ability to hyperlink content sources. Hyperlinking has become more than a useful tool—it has become an established practice used by technical communicators in authoring and publishing.

Hypermedia

Within hypertext, hypermedia was used to describe both static and motion-driven media (such as images, audio, and video) as the earliest forms of digitally interactive content (Barrett, 1991; Landow, 1997). It expanded the function of content, beyond text, to present content both textually and visually as the user demanded. Hypermedia responded to three types of learning—audio, visual, and kinesthetic—and, in theory, could integrate them seamlessly into a multimodal presentation of information. As technology evolves, older media forms (and products) converge, combining their functions into newer, more dynamic ones (Jenkins, 2006). Cellular telephones, more specifically, smartphones, and tablets, such as the iPad and Microsoft's SurfacePro, are examples which initially enabled voice transmission and integrated other functions such as texting (from pagers), image (from cameras), live video (from camcorders), social media, and other forms of content transmission. As a result, the convergence has enabled us to create, share, and publish hypermediated content, which delivers increasingly rich, dynamic, and engaging content (and experiences) for users.

Intertextuality

Intertextuality describes the implicit and explicit links between documents, which extends the boundaries of a single document, beyond a single page or file, to include external content sources (Bolter, 1991; Lanham, 1993; Joyce, 1996; Landow, 1997). Intertextuality also describes

Hypertext Theory

the relationships between documents, whether the content is directly linked, cross-referenced, or connected in some other fashion. As such, this early hypertext characteristic also emphasized the notion of relational content and semantics. Today, we see intertextual examples in content management systems, digital reports, social media content, websites, and many other forms. Within content management systems, the information networking capabilities can be seen as an extension of intertextuality, which allow technical communicators to source content and connect with users across a wide range of information resources and locations. As a result, intertextuality creates more dynamic and content-rich information products and experiences.

Multi-pathed or Non-linear Structures

Another important characteristic of hypertext was structural, enabling authors to create multiple customized information structures and paths within documents, which were often non-linear (Coover, 1992, 2000). Multi-pathing suggested organizing content in ways that users have choices in how they navigate, read, and experience content (Bolter, 1991; Landow, 1997). Within hypertext systems, authors planned possible pathways for users connecting content using hyperlinks and nodes, or connecting points, within a document's structure (Landow, 1997). And often, users would find their own paths through a document that were not considered by the authors. Today, information architecture has become its own discipline, focusing on creating user-centered associative and structured content. Information modeling is common practice that technical communicators use to structure content resources within a document or system (Hackos, 2007). And an increasingly complex range of navigation tools within documents and systems allows users to search, customize, personalize, and organize content to fit their own unique needs.

Collectively, these characteristics create a content-focused environment in which information resources can be leveraged via user-driven navigation tools, repurposed for a wide range of documents, and used to create and connect content, communities, and users. Hypertext's characteristics continue to inform both product and process (on structural, semantic, and content levels) helping to create a broader and more dynamic user experience in technical communication today.

The Evolution of Hypertext Theory and Practice

Hypertext, as a theoretical concept, has existed in some form for over 70 years and has been advocated across disciplines from computer science to literary studies. It was a buzzword of the 1980s and early 1990s but appeared to become dormant by the end of the 20th century, largely because there was not sufficient convergence between its theory and practice (or implementation) in publication. Hypertext theory, like technical communication, is inherently interdisciplinary in nature, and those who are credited with developing early iterations included both theorists and practitioners from a wide range of backgrounds.

Perhaps the first name associated with hypertext theory was Vannevar Bush—mathematician, engineer, and head of the Office of Scientific Research and Development during World War II—a visionary thinker who explored the ways in which machines could augment the human mind. Bush's *Memex*, introduced to the public in the 1945 *Atlantic Monthly* article "As We May Think," was a mechanized, microfilm-based information authoring and sharing device that would enable people to create "associative trails" between topics and ideas as one navigated through the materials stored on it. Although the *Memex* never progressed beyond the theoretical, Bush's description of the user creating "associative trails" that linked and combined others' materials with those generated by the individual would be echoed repeatedly by others who published on hypertext theory or developed early technologies for its implementation.

Few similarities exist between Bush and Theodor (Ted) Nelson who in the 1960s, coined the term hypertext. Nelson was initially trained as a philosopher who wanted to create a tool that would enable the writing and connecting of documents in an associative way. Unlike Bush's *Memex*, which was conceptual, Nelson's *Project Xanadu* was an actual prototype hypertext-like system. Nelson's project tried to set itself apart from the work of others developing platforms for electronic texts, although after several iterations, the "parallel pages, visibly connected" feature fell short of instantiation according to Nelson's vision. Despite the limitations of his work, Nelson's conceptual influence is clearly evident in both local and networked software applications, the largest, of course, being Berners-Lee's

World Wide Web, which would come nearly three decades later.

Douglas Engelbart, primarily known as the inventor of the mouse in the 1960s, also shared Bush's vision that technology could help extend and advance human intelligence. Engelbart's 1962 report "Augmenting Human Intelligence: A Conceptual Framework" summarizes and quotes from "As We May Think" at length before discussing the point that Engelbart finds critical—the *Memex*. In the report, he emphasizes the importance of

the implications extending from Bush's mention of one user duplicating a trail (a portion of his structure) and giving it to a friend who can put it into his Memex and integrate it into his own trail (structure). Also note the "wholly new forms of encyclopedia, "the profession of "trail blazers," and the inheritance from a master including "the entire scaffolding" by which such additions to the world's record were erected. These illustrate the types of changes in the ways in which people can cooperate intellectually that can emerge from the augmentation of the individuals. (p. 56)

Engelbart (1962) also describes the implementation of a "card system" he developed over the preceding eight years, using paper-based note cards to generate, record, and classify information. Although he could describe in some detail the benefits for working in the paper-based system, what became most obvious to him were the shortcomings. He notes

that the job of extracting, rearranging, editing, and copying new statements into the cards which were to represent the current set of product statements in each grouping was rather tedious. This brought me to appreciate the value of some sort of copying device with which I could transfer specified strings of words from one card to another, thus composing new statements from fragments of existing ones. (p. 61)

Engelbart (1962) also highlights a hypothetical interaction between user and computer to solve an increasingly complex set of problems and follows with the outlining of a research agenda to pursue the design and testing of such a system. What's important to note here is the extent to which Engelbart emphasizes

human-computer interaction (HCI) throughout his text, with an emphasis on the importance of the human intellect. In his conclusion, he notes that our "problem-solving capability represents possibly the most important resource possessed by a society. The other contenders for first importance are all critically dependent for their development and use upon this resource" (p. 131).

The 1970s were the decade of such developments as UNIX, of the first email, of the first microprocessor—in short, components necessary for the development of an actual, fully realized hypertext system were coming to fruition. From then until the early 1980s, the theories advanced by Bush, Engelbart, and Nelson in the mid-twentieth century were generating software applications. Interestingly, the same theorists writing about hypertext were also implementing them in practice. HyperCard was released by Apple in 1987—a digitized version of the "cards" Engelbart discussed 25 years earlier. That same year, Michael Joyce and Jay David Bolter released the first version of *StorySpace*, a narrative-based hypertext system for works of fiction and nonfiction. Two years earlier, Norman Meyrowitz began the *Intermedia* project at Brown University, which would soon be used by George Landow to develop the *Victorian Web* (Landow, 1991). The ACM held its first Hypertext and Hypermedia conference (now Hypertext and Social Media) in 1987. And in 1989, Tim Berners-Lee proposed an information management system at CERN using "distributed hypertext" that would become the World Wide Web.

Software development was flourishing, as were publications discussing how hypertext "fit" into the world of communication. A significant number of these publications took more of their cues from Nelson than Bush or Engelbart. Many came from the field of literary scholarship or creative writing, and their purpose was, in part, to explore a new "writing space" (Bolter, 1991; Joyce, 1996; Moulthrop, 1991) while examining the role of digital technologies in writing media and, in part, to link hypertext to poststructuralist and postmodern critical theory (Landow, 1991, 1994). Despite the explosion of Web-based technologies following Berners-Lee's initial development of HTML, a new generation of theorizing and writing hypertext failed to be fully realized. Why? In part, because such scholars as Vandendorpe (2009) contend that the segmentation and fragmentation espoused by hypertext,

Hypertext Theory

ultimately, did not fit the needs of most literary authors, and, as a result, many abandoned it entirely. Later disagreements and disconnects between theorists seemed to also relegate hypertext to the sidelines (Snyder, 1997; Pang, 1998).

Despite this short decline in scholarly publication on hypertext theory, Berners-Lee's World Wide Web would create the platform with the technological capability to instantiate much of the vision of the first generation of hypertext theory. The Web was founded using ideas of decentralization, non-discrimination, non-hierarchical design, universality, and design consensus. Unlike such applications as *HyperCard* or *StorySpace*, HTML, HTTP, and Uniform Resource Identifier (URI; later, URL) technologies could cross operating systems from the outset. While, as Pang (1998) noted, the Web was not *precisely* hypertext as described by the theorists of the 1980s, nor did hypertext theory accurately predict every way in which electronic publication technologies would evolve, the primary characteristics of hypertext theory would continue to influence information technologies as well as the work of technical communicators.

Beginning in the late 1980s and into the 1990s, technical communicators began turning their attention toward hypertext theory, perhaps due to the availability of tools like *Intermedia*, *HyperCard*, *StorySpace*, and, of course, the World Wide Web. During this time, Edward Barrett's three edited collections on hypertext represent the most extensive examination and should, perhaps, be considered the first authoritative voice who focused on aspects of hypertext relevant to technical communication in his volumes *The Society of Text*; *Text, ConText, and Hypertext*; and *Sociomedia*. Barrett noted that his 1988 *Text, ConText, and Hypertext* calls for integrating "three related areas of technical communication: writing, management, and computer technology" and thus "revisioning . . . the roles of writer, manager, and engineer" (p. xiii). Barrett imagined a future where writing would not be "ancillary support" but would be the "context in which development proceeds" (p. ix). Barrett seems ambivalent to the work of the critical theorists, noting that hypertext and hypermedia create "a mirage of depth" and that developers operate with a romantic notion of writing that still focuses on a single reader-author. In this view, Barrett finds that "[h]ypertext is essentially a muscular note-taking, or note-gathering, mechanism" (p. xxi).

In his 1991 *The Society of Text*, Barrett more explicitly rejects the cognitive basis on which Bush, Engelbart, Nelson, and many of the more literary/critical theorists based their discussions of hypertext. He labels hypertext as "a paradigm for the social construction of meaning or alternate 'texts'" (p. xiii) and terms "the most supple hypertext . . . a muscular hypertext, an active system rather than a passive one, would support the social construction of meaning that characterizes understanding and communication in the larger world beyond the computer screen" (p. xiv). Barrett seems to turn away from industry applications to education; in 1994, he suggests that the term "sociomedia" is a more accurate description of what hypertext and hypermedia do and claims that the term "forces us to look outward from the machine into the complex interaction of human relationships which define 'university' and 'education'" (p. 9).

Barrett's edited collections represent some of the most comprehensive treatments of hypertext, in that his work looks at both industry and academia and examines both theoretical and practical components. Throughout the 1990s, treatment of hypertext in technical communication followed a bifurcated path before it largely disappeared as a primary topic for technical communication. One thread followed a largely pragmatic agenda which attempted to introduce hypertext to the profession and report on specific, focused studies of readability, navigation, etc. (Rubens, 1991; Bernstein, 1991; Selber, 1994, 1997; Smith & Nelson, 1994; Wenger & Payne, 1994; Wickliff & Tovey, 1995; Bolter, 1998).

The other line of discussion and research regarding hypertext generally focused on more theoretical and/or abstract realms. Johnson-Eilola (1996) argues that the service model of technical communication is not helpful to the field, and that we must rearticulate technical communication to "symbolic-analytic work"—that is, working within and across information spaces. Albers (2000) examines the state of technical editing and discusses how user-driven hypertext/single-sourced documents can change the role of the technical editor. He recaps "traditional" editing at the turn of the century, then considers how these new kinds of documents could change the task of the editor. Albers recommends the addition of more training in content editing, coherence of text chunks, and the like. In other words, the task of the editor could become shaping documents for coherent multi-pathed chunking.

In 2001, Bill Hart-Davidson argued, in his treatment of technical communication's core competencies, that technical communication needed a theory, and that writing, particularly hypertextual writing, should be at the center. Hart-Davidson points to a discussion of hypertext closer to the tradition of Bolter and Landow than to Barrett when he references Johnson-Eilola's 1996 "Relocating the value of work: Technical communication in a post-industrial age" and 1997 *Nostalgic Angels: Rearticulating Hypertext Writing*. Hart-Davidson writes

Johnson-Eilola acknowledges the interesting paradox of hypertext, noting that it is by definition already "deconstructed" because it consists, in its native form, of distributed chunks of information—some of which might signify text, some images, some links, some executable code, and so forth. Yet the text is still experienced by the reader/user as a relatively real, coherent thing. The text can exist as a whole, but it does so only as an "effect" (1997, p. 149).

While Hart-Davidson's work would have seemed to prefigure a key role for hypertext going forward, many technical communicators struggled with how best to implement theory and practice, in articulating its relevance, and it again moved to the periphery of our focus.

Hypertext Theory and Technical Communication in Practice

As technologies, media, and applications continued to develop into the 2000s, so did the actual implementation of hypertext's characteristics within technical communication theory and practice. Authoring and publishing tools have capabilities that incorporate many characteristics of hypertext theory, which enable collaborative authoring, modular content, hyperlinking, hypermedia, intertextuality, and multi-pathed or non-linear information structures. These practices emphasize adaptability and agility, including roles largely defined by the nature of content and information products, and industry demands, which include a blend of experience and multiple specializations for its professionals (Baehr, 2015). Kimball (2016), for example, notes that the necessary skills for technical communicators entering the job

market often include "the ability to analyze rhetorical situations, to learn and apply generic conventions intelligently in context, to use technologies to speak effectively to diverse audiences, and to solve human problems through better communication" (p. 23). And highly valued skill sets for technical communicators, which are logical extensions of these, include content creation and strategy, visual design, information architecture, information development, and user experience design. This collective range of specializations, or core competencies, represents the work we do today, in a holistic sense, and might be described as information experience design, which encompasses information development processes (both agile and iterative) used to blend content, design, and structural elements, into a cohesive user experience.

Content, Design, and Structure

While technical communication continues to require the development of skills such as writing, editing, and technology use, trends in education and training emphasize a growing need for a much broader skill set, including content development and visual information design (Meloncon & Henschel, 2013). Hypertext theory prefigures content development strategies used today, which address granularity (size) and chunks (units), and accommodate a modular approach to content (which can be linked structurally and semantically) and transformed into various formats for delivery. Structured authoring describes the processes and tools used in developing organizational frameworks for content, as well as using specific technologies (markup, scripting, software, etc.) for its presentation and delivery. As an example, Hypertext Markup Language (HTML) is still one of the most widely used structured authoring languages, which has evolved over the decades to include the capabilities of hypertext to hyperlink, structurally organize, and add semantic value to presented content.

Although content may refer broadly to reusable combinations of textual, visual, and spatial elements that comprise information products, visual information design is nonetheless inextricably linked to its presentation and delivery. Clark (2007) argues that although content and presentation (design) may be developed independently of each other, they are in fact interdependent when creating a product—a claim which still holds true across variations and evolutions

Hypertext Theory

in system and software environments. For example, in Web site development, markup languages (such as HTML) are combined with the use of scripting languages, such as Cascading Style Sheets (CSS), which govern stylistic and positional characteristics, and others, such as JavaScript and Hypertext Preprocessor (PHP) are used to design interactive content and experiences. Design, in a technical communication context, incorporates all aspects of visual, spatial, and interactive (or hypermediated) content.

Developing content into coherent and usable information structures, whether at the superstructure (document, text, or product) or substructure levels of content (page or section), requires a complex understanding of how content relates to design. This task, described as information architecture, involves developing meaningful models and structural maps for content and communicating that structure to users (Rosenfeld & Morville, 2007). An extension of this work, component content management (previously discussed), describes the tasks of arranging content units as modular elements, which are assembled into a coherent, usable, and sometimes user-generated information product. These notions draw broadly from the hypertext characteristics of content-focused (content chunks), hypermedia (textual, visual, and interactive content), and multi-pathing (organizing and structuring content) discussed previously.

Information Development and User Experience

Two iterative and often agile processes that inform technical communication work include information development and user experience. Hart and Conklin (2006) argue that technical communicators have an “increasing involvement in planning and facilitating communication processes, not just products” (p. 413). The first process, information development, is the creation and management of content (visual, spatial, graphical) through its lifecycle (Clark, 2007), which involves the relational and semantic aspects of content creation. Information development incorporates three important hypertext characteristics: content-focused (modular content composed of text, visuals, and media), intertextuality (relationships between linked content), and multi-pathed or non-linear (user-centered associative content structures). A crucial extension of this development process and these characteristics is content strategy, which includes analyzing users,

content, organizational needs, processes and technology to develop a strategy for content maturity that is sustainable and standardized (Rockley & Cooper, 2012).

As information development technologies and products continue to evolve, technical communication work has become more “focused on designing and delivering better experiences to individuals, groups, organizations, and entire cultures” (Moore & Kreth, 2005, p. 303). This second process, known as user experience design, has evolved as its own subdiscipline, which involves the “creation and synchronization of the elements that affect users’ experience . . . with the intent of influencing their perceptions and behavior” (Unger & Chandler, 2009, p. 3). User experience design is closely related to the hypertext characteristics of hyperlinked (user-driven reading experiences), intertextuality (connecting content and users across wide range of resources), and multi-pathed (user-centered associative and structured content). Lauer and Brumberger (2016) suggest a similar articulation of the skill sets of technical communicators, which include the “ability to design and structure content in order to facilitate users’ interactions with the range of information products, sites, and applications that span the entirety of a brand experience” (p. 262). In a holistic sense, user experience design involves creating interactive experiences, or processes that govern the hypertext-like intertextual, multi-pathed experiences afforded to users within a complex and semantically-rich information product, such as information-based Wikis and websites.

Implications and Examples for Technical Communication as a Profession

Technical communication and hypertext theory share several important characteristics, which include collaborative authoring, content-focus, as well as content that is hyperlinked, hypermediated, intertextual, and multi-pathed. Our work involves a wide range of related products and practices, including agile and iterative processes, collaborative authoring tools, content management systems, data and text mining, instructional design, markup and scripting, structured authoring processes, social media content, and wikis. Figure 1 illustrates this progression of hypertext theory, and how its characteristics evolved into our core competencies, which have, in turn, influenced our products and practices.

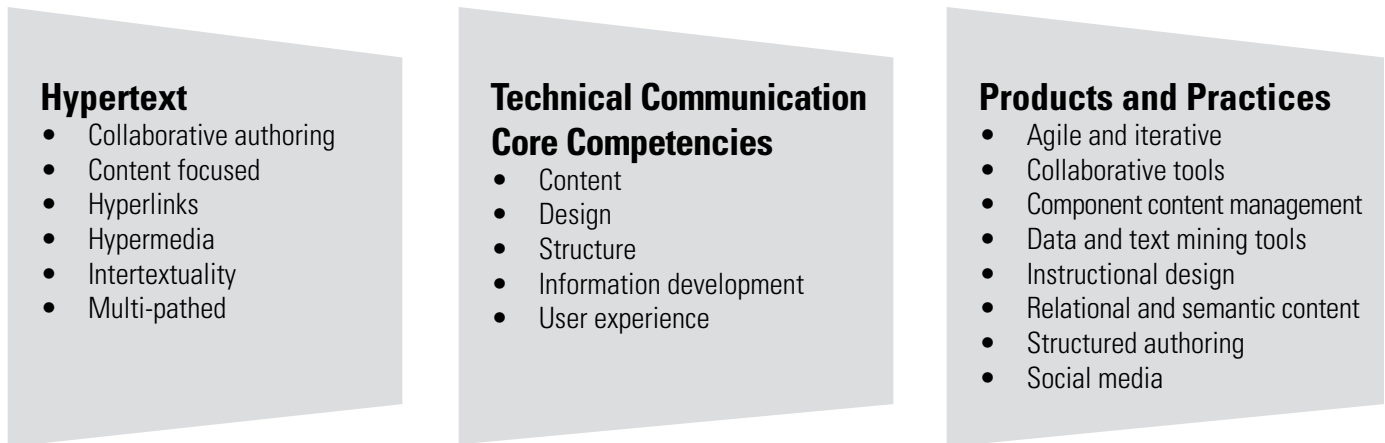


Figure 1. Hypertext theory and its characteristics have influenced the development of the core competencies of technical communication as well as its wide range of products and practices

Today, our products are designed for consumption by a potentially wider audience than that of the late 20th century via multiple platforms, largely informed by hypertext theory concepts and characteristics. Our information products contain words and varying levels of embedded media and visual content, depending on how a user chooses to access them. Digital artifacts often contain clickable links, both internal and external (to other documents) and often contain complex navigation and search tools. And they are easily produced and published, because even the most basic content authoring application have hypertextual features that make incorporating such elements simple. Authoring has become collaborative but infinitely more complex. While certain elements (video or audio clips, for example) may be produced by separate teams, the former writer or writers now assumes roles of Author/Editor/Designer/Curator/Strategist/Information Architect and even consumer of the material, using cloud-based applications and content repositories. These technologies have transformed not only the product but broadened the technical communicator skill set to encompass the design and development of information and user experience.

Another example involves the technical communicator's work with structured authoring tools and languages, such as HTML, CSS, and XML outside of a system-based environment, such as a content management system or software program. These markup languages were designed based on the prime characteristics of hypertext theory and beyond those initial characteristics, their use has evolved based on their appropriation by technical communicators.

By providing a language that allowed users to add customizable structures, hyperlinks, hypermedia, semantics, and presentational markup to augment the textual content, HTML changed the capabilities and environments in which content could be presented to users. These hypertext-based authoring frameworks also allowed content greater flexibility, through the use of tag sets, attributes, metadata, dynamic structuring, and transformation. As with the case of XML, technical communicators can completely customize their own language, with its unique set of rules regarding the content markup and presentation. As such, technical communicators began thinking of content creation from a multi-faceted perspective, including structure, design, usability, and interactivity as part of their work.

Additionally, social media content and tools illustrate the semantic potential of hypertext, creating collaborative, multi-pathed, and associative discussions which thread together various forms of hypertext and hypermedia. We see many practical examples embedded in social media content, including the use of APIs, hashtags, categories, tag clouds, memes, emojis and emoticons, visual imagery, and active hyperlinks, in complex combinations. Initially, social media was primarily the domain of public social discourse, but soon after its popularity, corporate entities saw its potential to broaden the user experience of both customers and stakeholders. As such, designing social media playbooks and implementing content strategy became necessary skills for technical communicators who support product development, technical support, documentation writing, and other Web-based publications.

Hypertext Theory

These examples, and yet many more, demonstrate the ongoing connections between hypertext theory and concepts and practices used today in technical communication. Although our field's evolution continues, hypertext theory provides a foundation for understanding how to articulate our skills, practices, and value to growing industries that rely on our products and expertise.

Conclusion

In 1962, Douglas Engelbart, one of the earlier hypertext theorists, saw the importance of finding best practices for harnessing the power of our capacity for both communication and critical problem solving. He wrote, in the concluding pages of *Augmenting Human Intellect: A Conceptual Framework*,

This is an open plea to researchers and to those who ultimately motivate, finance, or direct them, to turn serious attention toward the 'possibility of evolving a dynamic discipline that can treat the problem of improving intellectual effectiveness in a total sense. This discipline should aim at producing a continuous cycle of improvements—increased understanding of the problem, improved means for developing new augmentation systems, and improved augmentation systems that can serve the world's problem solvers in general and this discipline's workers in particular. (p. 132)

One could argue the above plea resonates with our field's evolution—that is, that technical communication is one of those disciplines that has helped harness the intellect, in part, through evolving skills and tools with strong influences and foundations drawn from hypertext theory. These characteristics also resonate throughout the core competencies for professional certification, which include project planning, project analysis, content development, organizational design, written communication, reviewing and editing, visual communication, content management, and production and delivery (STC, 2017). This range of abilities suggests that technical communication is rich in its specializations, methods, tools, and application of theory to practice. But, like other disciplines, technical communication focuses on function, or needs, and adapts to changing technologies of practice. Today, content and user analytics continue to drive the information structures of our products, and technical communicators build and strengthen new skills, through certification, continuing education and training, or

pursuing advanced degrees. And when we look back at the theoretical foundations of these products, processes, and competencies, hypertext theory has been a strongly influential framework in defining their scope.

For many decades, hypertext theory has influenced and provided a framework for the work we do, even though this influence has not always been recognized by those of us in the field. Future technical communication practices and methods will likely continue to evolve from the foundations of our current agile and iterative ones. Our understanding of content integrates discrete characteristics and practices, which include related hypertextual ones, including collaborative authoring, hyperlinking, hypermedia, intertextuality, multi-pathed or non-linear information modeling, and may yet evolve to include many others. As we adapt and appropriate new communication tools and technologies, our application and understanding of these foundational concepts will continue to transform our work. And if we are in search of a way to better articulate our choices and our profession, hypertext theory provides one way forward.

References

- Albers, M. J. (2000). The technical editor and document databases: What the future may hold. *Technical Communication Quarterly*, 9, 191–206.
- Baehr, C. (2015). Complexities in hybridization: Professional identities and relationships in technical communication. *Technical Communication*, 62, 104–117.
- Barrett, E. (Ed.). (1991). *The society of text: Hypertext, hypermedia, and the social construction of information*. Cambridge, MA: MIT Press.
- Barrett, E. (Ed.). (1994). *Sociomedia: Multimedia, hypermedia, and the social construction of knowledge*. Cambridge, MA: MIT Press.
- Barrett, E. (1988). *Text, ConText, and HyperText: Writing with and for the Computer*. Cambridge, MA: MIT Press.
- Barthes, R. (1974). *S/z*. (R. Miller, Trans.). New York, NY: Hill and Wang.
- Berners-Lee, T. (1999). Realising the full potential of the Web. *Technical Communication*, 46, 79–83.
- Bernstein, M. (1991). Deeply intertwined hypertext: The navigation problem reconsidered. *Technical Communication*, 41–47.

- Bolter, J. D. (1991). *Writing space: The computer, hypertext, and the history of writing*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Bolter, J. D. (1998). Hypertext and the question of visual literacy. In D. Reinking, M.C. McKenna, L.D. Labbo, & R.D. Kieffer, (Eds) *Handbook of literacy and technology: Transformations in a post-typographic world*. Mahwah, NJ.
- Bush, V. (1945). As we may think. *The Atlantic Monthly*, 176(1), pp. 101–108.
- Clark, D. (2007). Content management and the separation of presentation and content. *Technical Communication Quarterly*, 17, 35–60.
- Cook, K. C. (2002). Layered literacies: A theoretical frame for technical communication pedagogy. *Technical Communication Quarterly*, 11, 5–29.
- Coover, R. (1992). The end of books. *New York Times Book Review*, 21(6), 23–25.
- Coover, R. (2000). Literary hypertext: The passing of the Golden Age. *Feed Magazine*, 10.
- Delany, P., & Landow, G. P. (Eds.). (1994). *Hypermedia and literary studies*. Cambridge, MA: MIT Press.
- Derakhshan, H. (2016, July). Killing the hyperlink, killing the Web: The shift from library-Internet to television-Internet. In *Proceedings of the 27th ACM Conference on Hypertext and Social Media* (p. 3). ACM.
- Engelbart, D. C. (2001). Augmenting human intellect: A conceptual framework (1962). In R. Packer & K. Jordan (Eds.), *Multimedia. From Wagner to virtual reality*. New York, NY: WW Norton & Company.
- Foucault, M. (1972). *The archaeology of knowledge*. (A. M. Sheridan Smith, Trans.). New York, NY: Pantheon Books.
- Genette, G. (1997). *Palimpsests: Literature in the second degree*. (C. Newman & C. Doubinsky, Trans.). Lincoln, NE: University of Nebraska Press. (Original work published 1982).
- Hackos, J. T. (2007). *Information development: Managing your documentation projects, portfolio, and people*. Indianapolis, IN: John Wiley & Sons.
- Hart, H., & Conklin, J. (2006). Toward a meaningful model of technical communication. *Technical Communication*, 53, 395–415.
- Hart-Davidson, W. (2001). On writing, technical communication, and information technology: The core competencies of technical communication. *Technical Communication*, 48, 145–155.
- Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. New York, NY: New York University Press.
- Johnson, R. (1998). *User-centered technology: A rhetorical theory for computers and other mundane artifacts*. New York, NY: SUNY Press.
- Johnson-Eilola, J. (1996). Relocating the value of work: Technical communication in a post-industrial age. *Technical Communication Quarterly*, 5, 245–270.
- Joyce, M. (1996). *Of two minds: Hypertext pedagogy and poetics*. Ann Arbor, MI: University of Michigan Press.
- Kimball, M. (2017). The golden age of technical communication. *Journal of Technical Writing and Communication*, 47, 330–358.
- Landow, G. P. (1989). The rhetoric of hypermedia: Some rules for authors. *Journal of Computing in Higher Education*, 1(1), 39–64.
- Landow, G. P. (1991). *HyperText: The convergence of contemporary critical theory and technology (parallax: re-visions of culture and society series)*. Baltimore, MD: Johns Hopkins University Press.
- Landow, G. P. (1997). *Hypertext 2.0: The convergence of contemporary critical theory and technology (Parallax: Re-visions of Culture and Society Series)*. Baltimore, MD: Johns Hopkins University Press.
- Landow, G. P. (1994). *Hyper/text/theory*. Baltimore, MD: Johns Hopkins University Press.
- Landow, G. P. (2006). *Hypertext 3.0: Critical theory and new media in an era of globalization*. Baltimore, MD: John Hopkins University Press.
- Lanham, R. (1993). *The electronic word: Democracy, technology, and the arts*. Chicago, IL: University of Chicago Press.
- Lauer, C., & Brumberger, E. (2016). Technical communication as user experience in a broadening industry landscape. *Technical Communication*, 63, 248–264.
- Meloncon, L., & Henschel, S. (2013). Current state of US undergraduate degree programs in technical and professional communication. *Technical Communication*, 60, 45–64.
- Moore, P., & Kreth, M. (2005). From wordsmith to communication strategist: Heresthetic and political maneuvering in technical communication. *Technical Communication*, 52, 302–322.
- Moulthrop, S. (1991). You say you want a revolution? Hypertext and the laws of media. *Postmodern Culture*, 1(3), 1–24.

Hypertext Theory

- Nelson, T. H. (1965, August). Complex information processing: a file structure for the complex, the changing and the indeterminate. In *Proceedings of the 1965 20th national conference* (pp. 84–100). ACM.
- Nelson, T. H. (1999). Xanalogical structure, needed now more than ever: Parallel documents, deep links to content, deep versioning, and deep re-use. *ACM Computing Surveys (CSUR)*, 31(4es), 33.
- Pang, A. S. K. (1998). Hypertext, the next generation: A review and research agenda. *First Monday*, 3(11).
- Rockley, A., & Cooper, C. (2012). *Managing enterprise content: A unified content strategy* (2nd ed.). Berkeley, CA: New Riders.
- Rosenberg, J. (1996, March). The structure of hypertext activity. In *Proceedings of the seventh ACM conference on Hypertext* (pp. 22–30). ACM.
- Rosenfeld, L., & Morville, P. (2006). *Information architecture for the world wide web: Designing large scale web sites* (3rd ed.). Sebastopol, CA: O'Reilly Media.
- Rubens, P. (1991). Reading and employing technical information in hypertext. *Technical Communication*, 38, 36–40.
- Rude, C. D. (2009). Mapping the research questions in technical communication. *Journal of Business and Technical Communication*, 23, 174–215.
- Selber, S. A. (1994). Beyond skill building: Challenges facing technical communication teachers in the computer age. *Technical Communication Quarterly*, 3(4), 365–390.
- Selber, S. A. (1997). Hypertext spheres of influence in technical communication instructional contexts. *Computers and technical communication: Pedagogical and programmatic perspectives*, 3, 17.
- Society for Technical Communication. (2017, November 1). Certification. Retrieved from: <https://www.stc.org/certification/>
- Smith, D. C., & Nelson, S. J. (1994). Hypertext: An emerging and important medium of business and technical communication. *Journal of Business and Technical Communication*, 8, 231–243.
- Snyder, I. (1997). *Hypertext: The electronic labyrinth*. New York, NY: New York University Press.
- Unger, R., & Chandler, C. (2009). *A project guide to UX design*. Berkeley, CA: Peachpit Press.
- Vandendorpe, C. (2009). *From papyrus to hypertext: Toward the universal digital library*. Urbana, IL: University of Illinois Press.
- Wenger, M. J., & Payne, D. G. (1994). Effects of a graphical browser on readers' efficiency in reading hypertext. *Technical Communication*, 41, 224–233.
- Wickliff, G., & Tovey, J. (1995). Hypertext in a professional writing course. *Technical Communication Quarterly*, 4, 47–61.
- World Wide Web Foundation. (2017, November 1). History of the web. Retrieved from: <http://webfoundation.org/about/vision/history-of-the-web>.

About the Authors

Craig Baehr is an STC Fellow and Professor of Technical Communication and Director of Graduate Studies at Texas Tech University. He serves as Chief Examiner of the Certified Professional Technical Communicator Program, Chair of the Certification Committee, and Faculty Advisor for the STC Texas Tech University Student Chapter. Dr. Baehr is author of three books, *Web Development: A Visual-Spatial Approach*, *Writing for the Internet: A Guide to Real Communication in Virtual Space*, and *The Agile Communicator: Principles and Practices in Technical Communication*. Previously, he worked in industry as a technical writer, editor, Web developer, and program director for ten years for the U.S. Army Corps of Engineers. He is available at craig.baehr@ttu.edu.

Susan M. Lang is Director of the Center for the Study and Teaching of Writing and Associate Professor at The Ohio State University. In addition to hypertext in theory and practice, her research interests include technical editing, big data as it applies to teaching and assessment, writing program administration, and social media integration. Prior publications have appeared in *College Composition and Communication*, *Journal of Technical Writing and Communication*, *WPA Journal*, *Computers and Composition*, *College English*, *American Medical Writers Association Journal*, *Technical Communication*, *The Journal of Writing Analytics*, and various edited collections. She may be reached at lang.543@osu.edu.

Manuscript received 3 November 2017, revised 31 January 2018; accepted 27 March 2018.

Books Reviewed in This Issue

Doing Visual Analysis: From Theory to Practice 106

Per Ledin and David Machin

The Senses: Design Beyond Vision..... 106

Ellen Lupton and Andrea Lipps, eds.

Business Management for Engineers: How I Overcame My Moment of Inertia and Embraced the Dark Side 107

Alan C. Tribble, Ph.D., with Alan F. Breitbart, MBA

Metadata Essentials: Proven Techniques for Book Marketing and Discovery..... 108

Jake Handy and Margaret Harrison

The Stress Test: How Pressure Can Make You Stronger and Sharper..... 109

Ian Robertson

365 Technical Writing Tips 110

Keith Johnson

Telling the Design Story: Effective and Engaging Communication..... 111

Amy M. Huber

In Other Words: A Coursebook on Translation..... 112

Mona Baker

Thinking Globally, Composing Locally: Rethinking Online Writing in the Age of the Global Internet..... 112

Rich Rice and Kirk St.Amant, eds.

WordPress for Journalists: From Plugins to Commercialisation 113

LJ Filotrani

Applied Artificial Intelligence: A Handbook for Business Leaders 114

Mariya Yao, Marlene Jia, and Adelyn Zhou

Ethics and Practice in Science Communication 114

Susanna Priest, Jean Goodwin, and Michael F. Dahlstrom, eds.

Archive That, Comrade! Left Legacies and the Counter Culture of Remembrance 115

Phil Cohen

Don't Be Such a Scientist: Talking Substance in an Age of Style..... 116

Randy Olson

Scholarly Communication: What Everyone Needs to Know® 117

Rick Anderson

The Paper It's Written On: Defining Your Relationship with an Editing Client 118

Karin Cather and Dick Margulis

Introducing Science through Images: Cases of Visual Popularization 118

Maria E. Gigante

Breaking Down Barriers: Usability, Accessibility and Inclusive Design..... 119

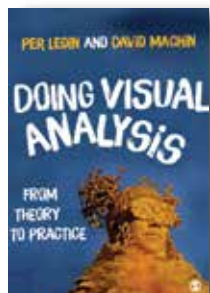
Pat Langdon, Jonathan Lazar, Ann Heylighen, and Hua Dong, eds.

A Connected Curriculum for Higher Education 120

Dilly Fung

Doing Visual Analysis: From Theory to Practice

Per Ledin and David Machin. 2018. Thousand Oaks, CA: SAGE Publications. [ISBN 978-1-4739-7299-5. 208 pages, including index. \$37.00. (softcover).]



Doing Visual Analysis: From Theory to Practice opens with the authors first discussing visual communications. In that discussion, Ledin and Machin cite leading books on visual analysis from the humanities and science academic disciplines as well as textbooks on visual communication.

Keep in mind that humanities and science disciplines may use the same terms, but their terms, explication (definition of terms), operationalization (ways terms are measured), analysis (quantitative or qualitative), and interpretations often vary greatly and can be radically different.

In Chapter 2, the authors position their book as in the humanities field of social semiotics. More specifically, the next six chapters focus on how they apply social semiotic analysis as a tool to analyze the social meaning of domains (photographs, document design, packaging, space design, film clips and data presentation).

To illustrate, in Chapter 3, they divide the photographic functions into photojournalism and art, then discuss the symbolic (uses) of photographs within each function.

Ledin and Machin suggested the intended uses—the purposes of photographs. Their discussion then focuses on analyzing denotation and connotation of photographs, objects within photographs and their functions, color. Under color, the authors explore modulation (flatness of photographs), saturation (intensity of color), purity (basic colors—red, yellow, for example, range (different colors used), and coordination (how colors link image content together). They then discuss photographic settings (location or events) and participants (individuals or groups), categories, generic versus specific groups or categories, and lack of representations. Next come consideration of actions and indexical links (emotional, verbal, and material processes). To close, they consider the position of the viewer, including horizontal angles, oblique angles, proximity, and gaze.

The chapter closes suggesting research questions. Ledin and Machin point out that the questions

asked will then determine the required analysis of the photographs being analyzed.

Analysis of the domains follows a similar pattern of first identifying the function, then considering a range of factors to be considered for analysis of that domain. The authors devote one or more narrative paragraphs exploring factors to consider.

What I found lacking were guidelines on how to summarize the analysis of the factors and interpret the meaning derived from the analysis.

Doing Visual Analysis is best for classes devoted to semiotics that first provide an overall guidance and background on its methodology and then explore specific topics under each domain. Then, *Doing Visual Analysis* could be used to explore the complexities of specific domains (kinds) of visual communications.

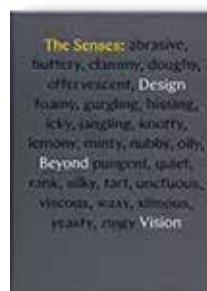
Technical communicators might find this book useful because the authors discuss a range of factors that could be considered when using specific domains.

Donald R. Zimmerman

Don Zimmerman is an STC Fellow and Jay R. Gould Award recipient. He taught technical communication classes and conducted research at Colorado State University's Department of Journalism and Technical Communication. Don's 150 publications include journal articles, book chapters, technical reports, presentations, newspaper and magazine articles, media productions, and books.

The Senses: Design Beyond Vision

Ellen Lupton and Andrea Lipps, eds. 2018. Hudson, NY: Princeton Architectural Press. [ISBN 978-1-61689-710-9. 224 pages, including index. US\$30.00.]



Inclusive design is a hot topic now, and designers are becoming more and more aware of the need to be inclusive with their designs. In April 2018, the Cooper Hewitt, Smithsonian Design Museum featured an exhibit titled *The Senses: Design Beyond Vision*; this exhibit argues that by including other

senses, beyond vision, with design, solutions tend to be more inclusive in nature. To accompany the exhibition, the Cooper Hewitt, along with editors Ellen Lupton

and Andrea Lipps, produced a book of essays by the same name.

The essays within *The Senses* explore the nature of our senses and their application to design. These essays vary in length with some taking a less formal approach as some tend to read more like a slide presentation which is missing the presenter to unify the ideas for us. The book's subtitle is emphasized due to the current nature of design, which focuses currently on sight.

The Senses directs designers to consider the other senses: touch, taste, smell, and sound, as well as to take steps to remedy this common neglect of the other senses. The overarching theme, proposed by Caroline Baumann, Director of Cooper Hewitt, in the Foreword states, "When designers open up to multiple sensory dimensions, products and services reach a greater diversity of users" (p. 6). In other words, when we incorporate senses, more than just vision, we are open to creating a more inclusive design.

This book is well designed for designers and by designers, with the result being subtle, yet beautiful. The cover is black with the title in yellow and the subtitle in white, with an assortment of words used to describe sensory experiences slightly debossed with a spot varnish that makes these words fall to the background, allowing the title and subtitle to stand out with a nice effect. Inside the book, the theme of black, white, and yellow is continued, with the prominent colors being white pages with black text, and yellow being reserved for the first page of some essays or to call out information within the text. A subtle yellow line is used to underline text within the essays and is a very nice detail that designers will appreciate. Full color images accompany the essays and illustrate many of the thoughtful sensory solutions contained in the book.

The Senses offers inspiration to designers who are interested in being both more inclusive and including sensory experiences within their designs. It also challenges designers to think more along these terms, leaving one with the feeling that this is just the beginning and that we will see more sensory design in the future.

Amanda Horton

Amanda Horton holds an MFA in Design and currently teaches graduate and undergraduate courses at the University of Central Oklahoma in the areas of design technology, design studio, and history of graphic design. Ms. Horton is also the director of the Design History Minor at UCO.

Business Management for Engineers: How I Overcame My Moment of Inertia and Embraced the Dark Side

Alan C. Tribble, Ph.D., with Alan F. Breitbart, MBA. 2018. Marion, IA: Alan C. Tribble. [ISBN 978-1-7321545-0-6. 218 pages, including index. US\$17.95 (softcover).]



Intense as it is, technical education fails to teach that engineering is fundamentally a utilitarian, economic activity. However advanced or intrinsically interesting technical innovation may be, its economic viability—and the justification for its existence—ultimately depends on someone

rarely considered in the engineering curriculum—the customer.

Once on the job, the engineer begins to realize that “there is always a business aspect to any engineering project”; that “taking ownership” of a project requires you to “treat it like a business—even better, to treat it like your business (which it is)”; and to consider not only the “inherently cool technical details,” but also the “necessary, and equally cool, business details” (pp. xiii–xv).

The engineer needs to develop a solid understanding of business, not only because “Business and engineering go hand in hand,” but also because understanding this principle will make the engineer “more successful as an engineer” (p. xii). The most successful engineers can discuss deeply technical details with other specialists and “explain what all of that technical analysis means to the business” (p. 70).

Such engineers realize that the risks associated with the most advanced technology, though necessary and worthy of investment, must be complemented by market-driven technical incrementalism, because “you only need to be slightly better than the competition to gain a much larger market share” (p. 43). That is, sustaining the business is a prerequisite for the investment in more exciting, but riskier, disruptive technologies and products.

Tribble extensively surveys the basics of financial and cost accounting, business models, planning, forecasting, reporting requirements, intellectual property, organizational structures, legal issues, globalization, and project and program management

tools such as statements of work and scheduling—essentially providing a “how-to” for the beginning engineer. Learning that a product must have a value proposition achievable only through a judicious trade-off between time (schedule), resources (money), and features (technology), focuses the engineer’s technical efforts on achieving the greatest financial return. The engineer’s economic focus also increases his value to the company, his productivity, justifying a higher salary than newly graduated engineers with nominally the same skills.

The emphasis on defense and aerospace in *Business Management for Engineers: How I Overcame My Moment of Inertia and Embraced the Dark Side* is less directly relevant to purely commercial enterprises but applying the rigor and systematic approach of government work would keep many start-ups out of trouble. More thorough planning and simple evaluative metrics, consistently applied, would increase the likelihood of creating a sustainable business (pp. 179–199).

Downloads of the figures and tables are available online. Tribble himself is available for training sessions. *Business Management for Engineers* should be required reading for all engineers, especially entrepreneurial types, who could more successfully grow their business by using the planning and management techniques Tribble illustrates.

Donald R. Riccomini

Donald R. Riccomini is an STC member and a senior lecturer in English at Santa Clara University, where he specializes in teaching engineering and technical communications. He previously spent twenty-three years in high technology as a technical writer, engineer, and manager in semiconductors, instrumentation, and server development.

Metadata Essentials: Proven Techniques for Book Marketing and Discovery

Jake Handy and Margaret Harrison. 2018. Berkeley, CA: Graphic Arts Books. [ISBN 978-1-5132-6089-1. 136 pages, including index. US\$12.99 (softcover).]



Are you an author or a staffer in a publishing company who is having trouble getting bookstores, libraries, and individual readers to understand what your books offer or even realize that they exist? One solution might be *Metadata Essentials: Proven Techniques for Book Marketing and Discovery*, a how-to resource distributed by Ingram Content Group.

Metadata are bits of data that differentiate one object from another. You tap into metadata when, for example, you search your photos by location, date, shutter speed, file size, and keywords. When marketing your book, you tell bookstores and libraries its description, theme, audience, style, awards, and more.

Metadata experts Jake Handy and Margaret Harrison both work at Ingram, the major industry force in getting your book to the right people. (Company job advertising states, “If you are reading a book, Ingram Content Group is probably behind it.”) *Metadata Essentials* is an Ingram tool “to help publishers and authors prioritize their metadata efforts and to demystify the way that booksellers, discovery sites, search engines, and libraries catalog, market, and merchandise your book” (p. 5). Your key takeaway, then, is how to use metadata so that others can discover your book.

The two main chapters provide deep detail heavily supported by graphics. The lengthy Chapter 2, “Take Action! Metadata Essentials, Your Step-by-Step Guide,” defines and generously illustrates various metadata attributes: titles, contributors, long and short descriptions, subject codes, international theme, audience information, rights, images, and more. A tabular metadata checklist early in the chapter briefly annotates the most important attributes; unfortunately, it sits next to another table that ranks attributes differently. Each kind of attribute gets a shaded half-page box that ticks off the basics, quick tips, importance of its components, and retailers’ input.

The authors offer dozens of best practices, such as “Use at least 7 keyword phrases, semicolon

separated with no space after the semicolon” (p. 70). Most interesting are the pages on devising keywords and writing descriptions. Be prepared for lengthy discussion of the ONIX XML metadata formats and codes and BISAC (Book Industry Standards and Communications) codes.

Handy and Harrison’s main contribution is Chapter 3, “Major Bookseller Profiles.” They use the results of in-depth interviews to create colorful, detailed tables showing precisely to what degree 14 major retailers use 24 data elements in selecting products. You get a set of “Smart Tips” for each retailer. For instance, “if your book is missing a cover image, it won’t be carried at Walmart.com” (p. 85).

The disappointing chapter “Metadata & Libraries” uses no graphics beyond bulleted lists. A problem for the writers is that this chapter has no connection to their interview results, so that they reproduce what we’ve heard before: the Dewey and Library of Congress classification schemes, the assignment of reading levels, and book review sources.

The book includes a glossary, which is serviceable except that it omits *ONIX*, a major term in their discussion that the authors never directly define. Much more useful is the deep index.

The book is not a smooth, easy read, with much unhelpful white space and inconsistent treatment of the captions of the many illustrations.

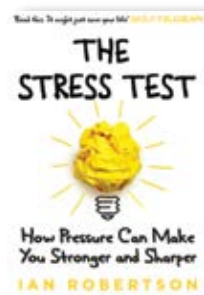
As a database person submerged in metadata, I happily greet this book’s publication. As an editor and writer, however, I know that the information deserves greater editorial attention.

Avon J. Murphy

Avon J. Murphy is a technical editor in western Washington. A retired college professor and government writer, he is an STC Fellow, a contractor, and principal in Murphy Editing and Writing Services, specializing in computer and Web technologies. Avon served as book review editor for Technical Communication for 17 years.

The Stress Test: How Pressure Can Make You Stronger and Sharper

Ian Robertson. 2018. New York, NY: Bloomsbury Publishing. [ISBN 978-1-4088-6039-7. 246 pages, including index. US\$17.00 (softcover).]



The Stress Test: How Pressure Make You Stronger and Sharper is a spectacular tale of the psychological and physiological science behind Friedrich Nietzsche’s maxim: “What doesn’t kill me, makes me stronger.” Robertson draws the reader in with stories of patients, the why behind it all, and how the reader can use

this information to be “stronger and sharper” through adversity.

Specifically, Robertson explains the competing right and left sides of our brains and how to use this information to our advantage. For instance, “Our physical movements mirror our mental states. One of the fundamental mental states is desire and the inclination to get nearer to the object of our desire” (p. 87). Robertson refers to this phenomenon as the “approach mode,” which is a key aspect of the brain’s left side. You can harness this knowledge to your advantage by gently squeezing a rubber ball in your right hand to increase activity in the left side of the brain which will “make you more positive and put you in “approach mode” (p. 110). This approach mode primes your brain for reward giving you a temporary confidence boost. Further, by activating the brain’s left side, you are inhibiting the right side which is responsible for anxiety. The simple act of squeezing the ball in your right hand can alter your physiology which will make you feel more confident and less anxious. This is specifically useful before a challenge. Robertson even shared that he used a “power pose” with a “right fist clenched” before a TEDx talk in which he was feeling anxious to help him give a “nerveless performance” (p. 111).

As illustrated with the ball, “what you do affects how you feel” (p. 102). So, it is especially intriguing that “bodily feelings are so similar across different emotions, we often don’t get a clear answer and so have to deduce the emotion from the context” (p.116). Therefore, with self-awareness you can actually “rewrite” the context of your emotions because the physical responses to excitement and nervousness are

very similar. For example, “saying ‘I am excited’ in the face of nervous arousal switches your brain into approach mode by creating a challenge or opportunity mindset” (p. 126) and improves performance. On the other hand, saying “I feel anxious” switches your brain into avoidance mode which “focuses your mind on the possible downsides of the situation” (p. 126) and decreases performance. Robertson drives this home when he writes, “Emotion arises, in part at least, out of how we *think* about the situation we are responding to” (p. 145). Therefore, your thoughts can determine how you feel and, in turn, your performance.

Robertson does a phenomenal job at explaining how our thoughts and actions determine our physiology and how to best use that information to our advantage. Each chapter elaborates on the prior chapters to further explain the complex science behind stress. *The Stress Test* is a must read especially for anxiety, stress prone individuals such as me.

Sara Buchanan

Sara Buchanan is an STC member that serves as the NEO STC community newsletter editor and is the membership manager for the IDL SIG. She is a Technical Writer at LCS in Cincinnati, OH for the software, Rent Manager.

365 Technical Writing Tips

Keith Johnson. 2018. Hollywood, FL: CreateSpace Independent Publishing. [ISBN 978-1-7210-3619-6. 168 pages. US\$9.95 (softcover).]



Quite eponymously, Keith Johnson's new book is an encyclopedia of tips for the newbies in the technical communication arena. It can also work as a general reference book for the experienced professionals.

In *365 Technical Writing Tips*, Johnson deals with tools, techniques, people and process. As Dave Lance, in the Prologue states: “It addresses the craft of technical writing. It supports you in the role of user advocate” (p. 17). In the Introduction, Johnson declares: “About half of the tips in this book are *writing-specific*. The other half are *insights, resources and strategies* that can be used to expedite your technical documents” (p. 20).

Building on the decades-long experience in the field, Johnson has comprehensively collated all information that may involve a technical writer in any field. Sometimes, the discussions may seem little redundant, but the intersection of responsibilities among different role players in a project team can easily be justified.

A comprehensive list of the broader categories into which the 365 tips fall in can read like this: 1) Abbreviations/Acronyms in the technical writing domain, 2) Authoring and image-capturing tools (both open-source and licensed), 3) Working practices, 4) Methodologies adopted in software development environment, 5) Professionalism in corporate culture, 6) Core documentation (writing, editing and review), and 7) English language skills.

The detailed, alphabetically arranged Table of Contents that spans over 14 pages perhaps makes up for the absence of an index that is essential for a reference book.

Many may find this book to be a pleasant surprise in seeing that the tips also cover some generic professional tips that may be helpful to people of any profession. For example, drive safe to the office and exercise daily—these tips do not have any direct correlation to the responsibilities of a technical writer.

For some interesting reason, Johnson has included a host of tips for Microsoft Office and Microsoft Visio tools. Similarly, the tips such as Meditation, Technical Writing (p. 69), My favorite time (p. 86), My favorite question: Why? (p. 87), Staying Motivated (p. 120), Time is Valuable (p. 126), and Understanding Magic (p. 128) may appear to be very generic to the readers, with less direct links to technical writing. Yet those new to the technical communication field may find those as important values that may help shape their career well whereas the experienced technical communicator may revisit the basics.

Many of us would agree with the disclaimer in the introduction where Johnson affirms this book “is neither personal nor professional advice, in any way. This book is for reading enjoyment only” (p. 20).

Arun Dash

Arun Dash works as a Principal Technical Author for AVEVA India LLP based in Hyderabad, India. With over a decade of technical writing experience, he has experimented with writing for various domains. He is a continuing Research Scholar in English (under the guidance of Dr. Leena Lilian) at KIIT (deemed to be) University, Bhubaneswar.

Telling the Design Story: Effective and Engaging Communication

Amy M. Huber. 2017. New York, NY: Focal Press. [ISBN 978-0-415-78554-9. 244 pages, including index. US\$39.95 (softcover).]



Technical communication is often undervalued, underfunded, and not well understood, and the prospect of using storytelling techniques to persuade decision-makers and garner support is exciting and promising.

Telling the Design Story: Effective and Engaging Communication

starts with three chapters that cover topics such as the human response to story, audience analysis, and story structure and design. Huber lays a strong foundation for using storytelling to create a visceral resonance and to facilitate the processing of information: "...our brains have an innate desire to organize information, and stories can help us link information into a series of events, then align those events with our own experience" (p. 7).

Her approach is refreshingly interdisciplinary. Huber includes authoritative references (such as Edward Tufte and Nancy Duarte) and provides persuasive evidence based on a wide variety of sources that include rhetorical history, psychology and cognition, marketing, graphic design, film-making, and more.

Her writing style is clear and approachable, with just a touch of humor. For example, in the chapter on public speaking, she writes, "The good news is you're presenting to human beings, not malicious alien-creatures" (p. 92). Huber includes direct instructions that are easy to follow, and the content is structured into a teachable form, with exercises and specific questions that allow readers to focus on discrete, achievable tasks.

Unfortunately, the teachable form often feels contrived. For example, Huber writes about the "6 E's of Information Engagement," and has changed "Information Clusters" to "Enformation Clusters" and "E-nformation Chunking" to create a mnemonic (pp. 104-105) that is more distracting than useful.

While the interdisciplinary approach is refreshing, the selection and treatment of topics feels uneven and disorienting. The topics range from basic and remedial (such as the structure of a paragraph) to specialized and more advanced (such as video production). Some relevant topics are neglected or discussed only briefly (such as PowerPoint presentations, which are ubiquitous and often mandatory in corporate environments). The subject shifts without enough transitions from design storytelling to design itself, and even wanders into job interviews and personal branding.

For practicing technical communicators, Huber's advice is sometimes dangerously oversimplified. For example, she declares that the use of active or passive voice can make "the difference between sounding confident or cowardly" (p. 61). Such declarations can lead to practitioners who dogmatically avoid passive voice, even when it's appropriate.

The biggest disappointment is the lack of design-story examples; while the book includes a few descriptions of design stories, it does not include the actual stories.

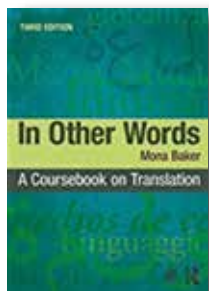
Overall, *Telling the Design Story* is a structured but somewhat shallow introduction to many aspects of information development with a deeper focus on storytelling and video production. As a survey of effective communication methods, it is valuable for students in all areas of study, if the students are guided by an instructor who treats the book as an entryway into the more sophisticated approach taken in many of the cited texts.

Tina Kister

Tina Kister is an STC member and a specialist in effective, healthy business communication. Her approach is to facilitate success in others by building trust, streamlining processes, and delivering products that exceed expectations. Tina's areas of expertise include technical writing, visual design, project management, and process improvement.

In Other Words: A Coursebook on Translation

Mona Baker. 2018. 3rd ed. New York, NY: Routledge. [ISBN 978-1-138-66688-7. 370 pages, including index. US\$38.95 (soft cover).]



The third edition of this widely used translation studies textbook, *In Other Words: A Coursebook on Translation*, includes a new chapter on how to handle visual puns and other issues that may arise when the match between visual elements and text in one language (the source) cannot be easily replicated in

another language (the target). Baker takes us text unit-by-text unit through potential problems and pitfalls when trying to transfer meaning from one linguistic system and culture to another. She starts with the smallest such unit, a single word, and moves through sentences and paragraphs to entire documents, including associated imagery. Beyond static text, Baker also discusses subtitling and translating other heavily visual media, such as comics. A chapter on ethical questions that both translators and interpreters may need to consider rounds out the book.

Each chapter includes examples from a variety of languages to illustrate the points discussed, extensive footnotes, a bibliography for further reading on the topic at hand, and suggested exercises. A glossary at the end explains the terms used throughout the book, but familiarity with the terminology used by linguists to dissect texts would be helpful before tackling the textbook.

Since this is a language-independent textbook, the exercises assume English as the source language—a slight problem for us into-English translators. All exercises ask the reader to reflect upon and explain the translation choices he/she makes. However, given the nature of the exercises, there is no answer key. Thus, the book is best used in educational or group settings where others may provide feedback.

The problems Baker raises are certainly worth contemplating, although they may be more applicable to working with literary or marketing texts rather than technical specifications or birth certificates. In the real world, however, deadlines and payment based on word count, not time spent, mean that many freelance translators rarely have time to ponder some of the finer points of implicatures or tone raised in this book.

Nonetheless, as a working translator without a formal background in the profession, I kept discovering issues that I had solved without necessarily thinking of them within a theoretical framework. Other problems were new to me but were interesting to contemplate anyway. Given the variety of languages used in the examples, I also learned interesting facts about, for example, Chinese or Arabic.

Even though *In Other Words* is a textbook for students of translation, those involved in writing source text or managing the translation process could benefit from reading it. The book's thorough exploration of the various ways in which a target text may differ from its source can help non-translators appreciate—or possibly question—how their translators approach the project.

Barbara Jungwirth

Barbara Jungwirth owns reliable translations llc (www.reliable-translations.com), where she translates technical and medical documents from German into English. She also writes about medical issues (www.bjungwirth.com). Barbara was previously a technical writer and IT manager.

Thinking Globally, Composing Locally: Rethinking Online Writing in the Age of the Global Internet

Rich Rice and Kirk St.Amant, eds. 2018. Louisville, CO: Utah State University Press. [ISBN 978-1-60732-663-2. 366 pages, including index. US\$39.95 (softcover).]



Thinking Globally, Composing Locally is an anthology with 15 chapters, plus an introduction and afterword by the editors. As Rice and St.Amant say, “We have inhabited digital landscapes for several decades...[but] the international online environment exists as a new terrain that must be continuously (re)examined and (re)mapped” (p. 341). This book brings us recent studies and new pedagogies from many cultures, including Egypt, Greece, Indonesia, Turkey, and Uganda, as well as the United States.

If you teach technical writing, you will find this book valuable both to devise new curricula and to assign case studies to your students. For example,

Josephine Walwema explains how a class can use digital notebooks to let students in several countries

share ideas. Cross-cultural composition and discussion help all participants become better writers and more culturally aware.

J. C. Lee describes how an online global forum about amphibians requires all contributions to be in standard English. This is not to be old-fashioned, but to be sure everyone understands you (no regional idioms) and to help contributors from other languages improve their English language skills.

If you are a practicing technical communicator, you may find many of the chapters fascinating, as I did, even though this isn't a "how-to" writing or editing guide. Some authors relay inspiring stories of their experiences in cultures other than their own. Some chapters made me think in new ways about the global audience who have access to our work. For example,

Amber Engleson's ethnography of how her Indonesian students struggle to get access to the published articles they need for their research made me realize the truth of her statement that "Resources *are* power; they dictate who can add to the current global written conversations and what they can write about" (emphasis in the original, p. 170).

In her study of how an online campaign spread virally, but then ran into trouble, Lavinia Hirsu draws our attention to the difference between "spreadability" and "drillability." The latter is about going deeper into the story. Passing on a tweet or liking a YouTube video isn't the same as engaging in the reality and complexity of the content.

As Hirsu writes, "The teaching of traditional [rhetorical] concepts . . . needs to be supplemented with a pedagogy attuned to the realities of a global world in flux" (p. 270). *Thinking Globally, Composing Locally* can help teachers do that. It can also help practitioners appreciate just how global our reach is today.

Janice (Ginny) Redish

Janice (Ginny) Redish is President of Redish & Associates in Bethesda, Maryland, USA. Ginny's "how-to" book, *Letting Go of the Words – Writing Web Content that Works*, will help you and your colleagues communicate successfully through your Web sites and social media. Ginny is an STC Fellow and a former member of the STC Board of Directors.

WordPress for Journalists: From Plugins to Commercialisation

LJ Filotrani. 2018. New York, NY: Routledge. 196 pages, including index. [ISBN 978-1-138-65202-6. US\$39.95 (softcover).]



WordPress for Journalists: From Plugins to Commercialisation surprised me in how in-depth it covers its topics. Provided, it is not only information about how to complete tasks in WordPress but also how to use this content management system to produce journalism today.

LJ Filotrani has an impressive background and is most qualified to tackle her topics. Not only is she an experienced journalist and web site editor and creator, she is also a Senior Lecturer in journalism at London South Bank University. She has a valuable perspective as she started her career in journalism working in trade publications and local press then joined the *Guardian* working completely online. She introduced blogs, podcasts, video, and other multimedia as she worked as a site editor for the *Guardian* and looked at how best to communicate a story. Her background in audio and video plus the experience of news and features gives her a great background to not only teach but also develop the impressive *WordPress for Journalists*.

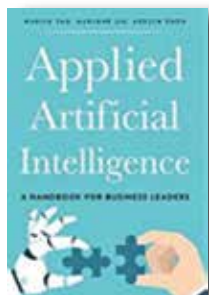
This book could be an excellent textbook for students or reference book for practitioners. Students and practitioners could benefit from how the book explains how to set up a free site using WordPress.com (p. 12). Students and practitioners could also benefit from the section on setting up a self-hosted site using WordPress.org (p. 14). Also the commercialization sections are of value to students and practitioners. Filotrani notes in this section how difficult it is to make a profit with journalism online using the *Guardian* as an example (p. 172).

Jeanette Evans

Jeanette Evans is an STC Associate Fellow; active in the NEO community, currently serving on the newsletter committee; and is co-author of an *Intercom* column on emerging technologies in education. She holds an MS in technical communication management from Mercer University.

Applied Artificial Intelligence: A Handbook for Business Leaders

Mariya Yao, Marlene Jia, and Adelyn Zhou. 2018. USA: TOPBOTS Inc. [ISBN 978-0-9982-8902-1. 228 pages. US\$19.95 (softcover).]



When you hear the words “artificial intelligence” what comes to mind? Robots doing work in factories? Characters from the movie *Avengers*? Or Deep Blue, the 1990’s chess-playing computer developed by IBM?

In *Applied Artificial Intelligence: A Handbook for Business Leaders*,

the authors introduce artificial intelligence (AI), then proceed to address how to develop an enterprise AI strategy, and they describe the enterprise functions where it can be used, such as human resources, analytics, software development, marketing, sales, and customer support. In addition, the authors discuss the ethics of enterprise AI, as they point out that not everyone will equally benefit from the opportunities that AI will bring about; however, it will create the demand for new jobs requiring new skills.

The authors explain the benefits of AI to society, for example, pathology and radiology rely largely on trained human eyes to spot anomalies and these fields are now using computers that can interpret patient records with a 99-percent accuracy rate (p. 35).

Just as any good thing can be used for bad, the same goes for AI. Therefore, it is important to design safe, ethical AI.

Businesses are realizing the strength of AI and are on the forefront of developing an enterprise AI strategy. The authors provide suggestions for how we can prepare for the AI future. In business, it is important to choose the right champions of AI initiatives. Consider whether you need a Chief AI officer. The authors stress the importance of getting organizational buy-in by focusing on revenue potential, staying ahead of the competition, starting small, and showing early wins. “True leadership has to be demonstrated through vision, action, and budget” (p. 88).

Among the many areas where AI can be used is human resources. For example, Scout and SAP’s SuccessFactors help match, discover, and find candidates based on desired skills using AI techniques such as algorithmic matching.

The last chapter is a summary and additional resources, followed by end notes consisting of over 100 sources.

You can visit the authors’ website (appliedaibook.com) containing articles, resources, and a community link. Among the resources is an article that lists 100 examples of brand bots that are already in industries, such as Dom, the Domino’s Pizza chatbot, and Capital One’s Eno that can be used to track account balances, get bill due dates, and check recent transactions.

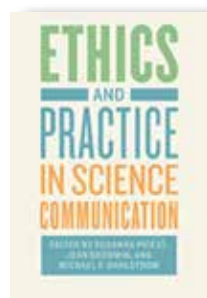
In summary, *Applied Artificial Intelligence* is an excellent high-level book that not only provides an overview of AI, but it quickly educates the reader on the basics for developing an AI strategy and the ethical responsibility involved when implementing this technology.

Rhonda Lunemann

Rhonda Lunemann is a technical writer with Siemens PLM Software, a senior member and serves on the Program Committee of STC’s Twin Cities Chapter, and a member of the MN (Minnesota) Bot Makers.

Ethics and Practice in Science Communication

Susanna Priest, Jean Goodwin, and Michael F. Dahlstrom, eds. 2018. Chicago, IL: The University of Chicago Press. [ISBN 978-0-226-49781-5. 306 pages, including index. US\$40.00 (softcover).]



“Ethical considerations are not a supplementary component to the practice of science communication” (p. 9), a critical point that is effectively communicated and demonstrated in *Ethics and Practice in Science Communication*. For anyone involved in science communication, from scientist to

student, this book is a valuable resource that illustrates how ethics is as much a part of science communication as clarity and engagement, which are ethical issues in and of themselves.

The book begins by explaining a common perspective on science communication: the “deficit model,” which is the assumption that the public is not engaged with or they are resistant to science due to a lack of scientific knowledge or scientific literacy; therefore, if there was increased and more clear

communication, then the public would understand what needs to be understood. The problem with this model, as pointed out by several contributors, is it is not always accurate. This inaccuracy is challenged in Part I, *How Ethics Matters*, through alternative models for science communication taken from Speech Act Theory that depend on the role of the science communicator and “provide an account of science communication that respects audience members’ agency” (p. 29). Other chapters address public concerns in risk communication, goals and approaches to strategic and democratic science communication, especially when communicating controversy, and framing scientific issues for democratic engagement, which encourages citizens to reflect and deliberate on issues before deciding on a course of action.

Part II, *Professional Practice*, explores “diverse ethical challenges arising in particular contexts” (p. 91), such as the level of accuracy when using narrative in public policy and reflecting on the character of the scientist or science writer, especially considering “objectivity” and “truthfulness.” Discussion on persons and science communication continue with a review of expert sources most quoted and relied on by journalists and how this reliance affects what gets reported and how stories are framed. And the question of whether scientists have a duty to communicate with the public is also addressed.

Part III exemplifies previous chapters through case studies that illustrate the need for transparency in science communication, consumer concerns regarding genetic testing, controversial issues in agricultural biotechnology, how “meanings-in-use” or varying definitions, especially of “ethics” conflict, and the juxtaposition of science against non-science perspectives like religion and beliefs.

Readers who are familiar with science communication will recognize many of the topics in this book. However, what is new and enlightening is the angle on ethics. For instance, many studies and books emphasize the importance of using narrative in science communication to increase readability of information the public may otherwise have difficulty grasping, but as Dahlstrom and Ho point out, narratives may affect purpose, persuasive appeal, and level of accuracy. Likewise, Kravand discusses ethical implications of journalists using celebrity scientists or the “overreliance on a limited number of expert sources” who can “affect

the objectivity and balance of science and medical stories” (p. 150). The point here is that even if readers see familiar topics in the table of contents, ethical angles on these subjects have rarely been addressed before.

Diane Martinez

Diane Martinez is an assistant professor of professional and technical communication at Western Carolina University. She previously worked as a technical writer in engineering, an online writing instructor, and an online writing center specialist. She has been with STC since 2005.

Archive That, Comrade! Left Legacies and the Counter Culture of Remembrance

Phil Cohen. 2018. Oakland, CA. PM Press. [ISBN 978-1-62963-506-4. 142 pages, including index. US\$19.95 (softcover).]



Archive That, Comrade! Left Legacies and the Counter Culture of Remembrance provides an informed outsider perspective on archives and their multiple roles in public memory. Cohen grounds his discussion in radical activist and social justice movements’ archives.

While these movements may interest only a portion of technical communication (TC) professionals and academics, this book is not a social justice primer or handbook. Cohen’s text offers significant value regardless of the reader’s politics.

In depth and detail, *Archive That, Comrade!* discusses working with documents and the complexities of sorting, filing, organizing, and storing documents as well as non-traditional artifacts—especially when the artifacts are from underground, counter cultural, or politically fractious groups. Fanzine scholars, particularly librarians, have been addressing many of these same concerns for at least the past twenty years. Thus, for readers working with zine culture or with cultures that communicate and express with fanzines, flyers, posters, and other difficult to archive documents, Cohen offers good discussions of the challenges, another academic reference point to cite, and a leftist political view on how such artifacts can fit in the larger movement. He provides a solid introduction for those not familiar with zine culture or the diverse forms of printed expression many counter and subcultures use.

Connecting to several of TC's goals, access, and communication, Cohen explores how some archives make their materials accessible to the public. Whether the issues are the physical buildings and spaces, concerns about rent or proximity to user populations, or how archives' materials are organized and stored—as well as if individuals can copy or handle the artifacts themselves—are discussed to an extent. A bit more elaboration and depth in these areas would have been interesting, but there is certainly enough here for many TC scholars to connect.

Cohen also discusses some of the challenges or working with different communities to build collections. Determining how to avoid colonizing or perpetuating racist, gendered, or classist privilege is neither easy nor clear. No solution is offered; rather, Cohen reflects in a limited way on some of the immediate challenges he encounters. Building archives that serve diverse communities—even when some community members may not agree that the archives have any value—is touched on in several places.

Archive That, Comrade!'s text and tone are engaging. The book features an interesting mix of approaches. First is Cohen's lived experience working with multiple projects and archives personally and professionally. Second, he visits, discusses, and describes two archives that serve different populations and have radically different funding. Third, he uses interviews to solicit additional information and perspectives on the archiving process.

Cohen is adept with academic and theoretical voices, but usually remains in a more accessible register. *Archive That, Comrade!* could work as a good introductory discussion to subcultures, archiving, document preservation, the political and social implications of archives, documenting and preserving social and cultural histories, or studying communication systems and artifacts within political and social movements as they occur.

Gregory Zobel

Gregory Zobel is an associate professor of Educational Technology at Western Oregon University.

Don't Be Such a Scientist: Talking Substance in an Age of Style

Randy Olson. 2018. 2nd ed. Washington, DC: Island Press. [ISBN 978-1-61091-917-3. 236 pages, including index. US\$19.99 (softcover).]



Science has important things to teach us, but often has difficulty making its case to the public. In *Don't Be Such a Scientist*, Olson offers an approach grounded in the time-honored principles of storytelling.

In the early 1990s Olson was a tenured professor of marine biology. Teaching and research were fine, but science needed spokespeople who could bridge the cultural divide and reach a larger audience.

With humor and humility, he tells how he gave up tenure, moved to Hollywood, enrolled in film school, took improvisation acting classes, and became an award-winning filmmaker (*Flock of Dodos*, about evolution and intelligent design, and *Sizzle*, about global warming).

The book's title reflects Olson's observation that, when it comes to reaching a broad audience, scientists—overly cerebral, literal minded, wanting only the facts, mistrusting of narrative, impatient of non-experts—can be their own worst enemies, and need to lighten up.

Reaching and engaging the public, Olson argues, requires addressing not just the head, but the heart (emotions) and the guts (intuition), and is best done through well-crafted narratives. Drawing on Joseph Campbell's work on mythology and on leading books on screenwriting, Olson shows what goes structurally wrong with science communication. Scientists often attempt to make their points by just piling up more facts: and, and, and. But narrative requires a simple, but powerful, pattern of And, But, Therefore (ABT). The "and" sets the scene, the "but" introduces a problem or challenge that requires action, and the "therefore" relates what is done to meet the challenge. (Our environment was once clean but is now polluted. Therefore ...). The pattern is universal, and once mastered, can help you craft anything from a compelling science-based argument, to an effective elevator speech.

Olson stresses that what he is recommending has nothing to do with making things up or bending the

truth, but with selecting your most compelling facts and sequencing them to tell a story that will resonate with an audience. Simple as it is, putting the ABT pattern to work takes care, patience, and practice. With lots of entertaining examples, Olson shows how it's done.

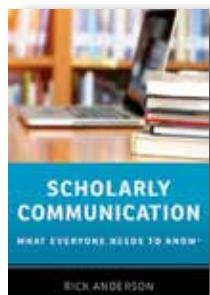
Those interested in Olson's approach may also want his other books, *Houston, We Have a Narrative*, in which he expands on the art of applying storytelling to substantive information, and *Connection*, which is based on his workshops.

Patrick Lufkin

Patrick Lufkin is an STC Fellow with experience in computer documentation, newsletter production, and public relations. He reads widely in science, history, and current affairs, as well as on writing and editing. He chairs the Gordon Scholarship for technical communication and co-chairs the Northern California technical communication competition.

Scholarly Communication: What Everyone Needs to Know®

Rick Anderson. 2018. New York, NY: Oxford University Press. [ISBN 978-0-19-063945-7. 280 pages, including index. \$16.95 (softcover).]



Anderson admits right off that he's not expecting to sell any movie rights for this book. But he stresses that there are really many things that most people would clearly benefit from knowing. If, say, you're interested in the progress being made towards a cure for cancer, or the effects of economic policies on

people's wages, then you have a vested interest in the scholarly communication "ecosystem."

Given the unending stream of information coming at us from every side, it becomes more crucial that we have reliable ways of evaluating that information.

Scholarly communication "refers to the many different ways...authors and creators of scholarly and scientific work share information with each other and with the rest of the world about the work they are doing" (p. 5). The book's theme is that more information is being transmitted online. And that change has affected everyone.

As the Web began maturing in the 1990s as a global disseminator of communication and publishing, scholarly journals joined the caravan. While many still appear in print format, the majority are consumed online. Rarely, if ever, do new journals appear in print format only.

Nothing is free; everything has a price. But the digitizing of knowledge has had some astounding effects. Take indexes, for example. In some online textbooks, the page numbers are hot; selecting a page number takes you immediately to the actual page.

Blogs have also become an important place for serious scholarly and scientific discourse. Quite a few professional societies maintain blogs for discussing important issues. Likewise, listservs are basically email discussion groups.

The Internet has also made it possible for almost anyone to publish inexpensively. If you want to publish a book, and make it freely available to the world, you can just open a free blog account and post it.

Digitization has also had a major impact on libraries. Over the past few decades, the location of scholarly books and journals has moved substantially online. This has had a profound effect on things like library budgets, as well as the actual size and changing functions of libraries themselves. It has also allowed them to acquire and store far more holdings than could be contained in paper books and periodicals on shelves. Centers like the Digital Public Library of America and the Gutenberg Project, the Library of Congress' American Memory Project and the HathiTrust have digitized enormous quantities of material.

The HathiTrust, for example, includes almost 15 million books in its collection, including 20,000 titles from pre-1500. "No single research library in the world contains that many books from that period" (p. 171). Such resources allow you to carry on some sophisticated research, in a shorter period. And from almost anywhere in the world if you have an Internet connection. Where would you like to be writing your next book from?

Steven Darian

Steven Darian is an STC Fellow and retired from a career at Rutgers University, where he taught business and technical writing as well as other language-related courses. Steven's most recent book is the second revised edition of "Technique in Nonfiction: The Tools of the Trade."

The Paper It's Written On: Defining Your Relationship with an Editing Client

Karin Cather and Dick Margulis. 2018. Andslash Books. [ISBN 978-1-7260-7329-5. 70 pages. USD\$12.50 (softcover).]



The Paper It's Written On: Defining Your Relationship with an Editing Client fills the needs of an independent editor. Cather and Margulis ably tackle their subject matter with Cather being a former litigator and freelance editor working with academic works, memoirs, police procedurals, science fiction,

thrillers, true crime, and fantasy (wow!). Margulis is an editor and book designer with over a decade of experience that includes helping authors be their own publishers.

In looking at defining the relationship of the freelance editor with an editing client, the authors choose their topics carefully. Cather and Margulis keep in mind that the independent editor is a professional running a business who may hear they need a contract with every client, and other books do not address the needs of this situation, so this book fills the gap.

The Paper It's Written On could prove to be practical and useful to an editorial freelancer. The kind of contract the authors discuss could help to prevent problems. The audience is an editorial freelancer looking to establish guidelines and/or set limits when working with a client. The information presented is useful and practical.

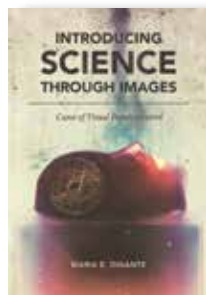
Of note are two sample contracts. One is Cather's template (p. 53). The other is Margulis's template (p. 60). Cather's template struck me as especially interesting when she requires payment up front before she provides her final deliverable. Margulis's template is especially interesting when he provides an à la carte menu with charges for each service including such items as line editing and project management. While the authors provide these contracts as examples, they also note that a contract can take on many forms and is simply an agreement. It can even take on the form of a series of emails provided both parties agree.

Jeanette Evans

Jeanette Evans is an STC Associate Fellow; active in the NEO community, currently serving on the newsletter committee; and is co-author of an *Intercom* column on emerging technologies in education. She holds an MS in technical communication management from Mercer University.

Introducing Science through Images: Cases of Visual Popularization

Maria E. Gigante. 2018. Columbia, SC: The University of South Carolina Press. [ISBN 978-1-61117-874-6. 140 pages, including index. US\$39.99.]



The public has always had a love/hate relationship with science. On one hand, science is celebrated in Western culture as a powerful tool for teasing out the truth from mere beliefs and "folk wisdom."

However, science is also sometimes seen to confuse and manipulate the general public, who may lack the

scientific literacy necessary to interpret technical information. Scientific visuals play a vital, and often overlooked, role in not only illustrating and clarifying scientific information, but also in shaping public perception toward science itself. Maria E. Gigante's *Introducing Science through Images: Cases of Visual Popularization* explores and dissects the history of these visuals from 300 years ago when science was known as natural philosophy to the modern age of science journals and periodicals.

The main thrust of *Introducing Science through Images* is to discuss the use of, and best practices for, using scientific images in various scientific genres. Gigante begins by tracing the evolution of scientific images from "portal images," or introductory images in early scientific works, to depictions of scientists at work, covers of popular scientific magazines and journals, and finally to the use of science visuals on the web and as stand-alone pieces in art contests. This broad treatment results in a panoramic view of the various uses of visuals in the sciences, but it also makes the book seem less cohesive than it could be. The discussion of the visuals differed so much in terms of genre, audience, and type of visual that the book read like a collection of disparate articles rather than an academic work on one unified theme.

Despite Gigante's lamentation that she was unable to obtain some of the necessary permissions to display all the images under discussion, the book contains many representative illustrations. My only regret is that the images were not in color and many would have been easier to view if they were shown closer to their original scale. Many of Gigante's assertions about the use of color and the fine details, like illustrations, lacked impact when shown to the reader on a smaller scale and in black and white.

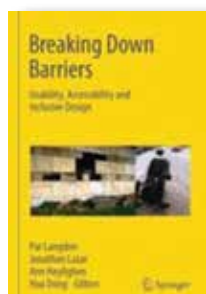
Introducing Science through Images is worth recommending although it has some serious deficits in cohesiveness and in the visuals. This text is one of those rare academic books that has wide appeal. Gigante specifically and accurately outlines her audience as both scholars in rhetoric and related fields, such as information design, and science practitioners. Beyond these audiences, this book may have even broader appeal. Technical communicators working in the medical fields will certainly find much that is useful in this book, particularly when it comes to designing posters and visuals for the public. However, any professional interested in or working with the sciences will learn much from Gigante's work. I have already recommended it to a colleague who specializes in the depiction of science in literature, as well as to a technical communicator who documents images for disaster remediation.

Nicole St. Germaine-Dilts

Nicole St. Germaine-Dilts is an Associate Professor of English in the Technical and Business Writing Program at Angelo State University. Her research interests include technical communication for international and intercultural audiences and technical communication in the health fields.

Breaking Down Barriers: Usability, Accessibility and Inclusive Design

Pat Langdon, Jonathan Lazar, Ann Heylighen, and Hua Dong, eds. 2018. Cambridge, UK: Springer. [ISBN 978-3-319-75027-9. 286 pages, including index. US\$199.00.]



Technical communicators interested in learning about the inclusive design aspect of User Experience will find *Breaking Down Barriers: Usability, Accessibility and Inclusive Design* both fascinating and inspiring. In this book, the editorial committee of the Cambridge Workshops on Universal Access and

Assistive Technology (CWUAAT) provides a collection of twenty-four enlightening scholarly papers presented at those workshops in April 2018.

Each paper provides details with supporting graphics highlighting the creativity, collaboration, and compassion so many are using to help physically

and emotionally impaired people live better lives. The CWUAAT editorial committee organized the papers into five parts based on broad themes they "...identified in the emerging field of design for inclusion" (p. v).

Part 1 highlights breaking down barriers between disciplines. Too often, technical, medical, and civic communities lack good communication as they work to solve significant community problems. This section includes a case study highlighting how two neighboring communities in Ireland, striving to reduce tragically high suicide rates, revamped their common architecture and environment to inspire hope in their citizens.

Part 2 focuses on breaking down barriers between users, designers, and developers. Everyone benefits when designers have a better understanding of the capability needs of end users. This section includes a case in which physically impaired architects provided consult on developing more accessible swimming pool designs.

Part 3 discusses removing barriers to usability, accessibility, and inclusive design. Here, the editors highlight how user centered designs and human-computer interaction address the challenges of aging. Papers in this section cover improving usability designs for people with dementia, impaired vision, and lost mobility due to stroke.

Part 4 discusses breaking down barriers between people with impairments and those without. One paper in this section highlights a ten-year effort in an undergraduate computing class establishing partnerships between students and impaired computer users outside the university. Student comments about the course include, "...the class is a 'must-take'...it really helped me understand people with disabilities better" (p. 178).

Part 5 addresses barriers between research and policymaking. Accessibility gaps still exist despite laws enacted to close them. Papers in this section discuss password policy development and education of architects ensuring improved accessibility for older people.

Additionally, there are papers describing autonomous automobile solutions, improved smart speaker solutions for veterans with mild brain injuries, and improved cancer care environments. Collectively, the papers in this book highlight "...a user-centered approach...to make someone's life easier and more productive" (<https://www.stc.org/about-stc/defining-technical-communication/>).

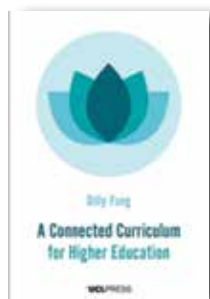
Technical communicators will find *Breaking Down Barriers* a worthwhile read as they learn what work is going on to advance inclusive design methods. All readers will be encouraged to learn how so many teams, communities, and companies around the world are working to improve the lives of so many people.

Scott Fouse

Scott Fouse is an STC member and a student in Dr. Ryan Weber's Theory and Practice of Technical Communication course at the University of Alabama in Huntsville. Scott works at the Defense Acquisition University as both a professor and consulting support coordinator.

A Connected Curriculum for Higher Education

Dilly Fung. 2017. London, England: UCL Press. [ISBN 978-1-911576-34-1. 168 pages, including index. USD\$30.00 (softcover).]



A Connected Curriculum for Higher Education calls us to return radical self-improvement to the great modern university. In a world where “fake news” is growing and expertise is frequently disdained, students should no longer be satisfied with a limited set of discipline-based skills. They should

ask how knowledge itself is unearthed: How is it found, tested in extended dialogue with others, and collectively understood? And how can they learn to respond uniquely to the unfamiliar, different, and disturbing in our world?

The bracing answer to these questions comes from the Connected Curriculum framework introduced in 2014 at the University College of London. The framework is a set of six “values-based dimensions” that, when adopted together, can produce a dialogue-provoking thread across the academic curriculum. As to these dimensions, the adjective “values-based” is important—the book aims to shift education from simply training students in employable skills toward cultivating in them a powerful, lifelong curiosity and capability for intellectual and civic growth.

What are the dimensions of the framework, and more importantly, how do you get them all to work together? Often, an activity hits multiple dimensions at once. For instance, materials science and physics students

on a chemistry research team who create a research poster will work across disciplines (dimension 3), connect with each other and various students (dimension 6), produce an output directed at an audience (dimension 5), and connect with a researcher at their institution (dimension 1). If they produce a material useful to the world, they will also have connected workplace and academic learning (dimension 4).

Each chapter covers a dimension which includes a philosophical justification, including multiple academic references, and multiple practical vignettes from various universities, mostly in the U.K. The vignettes come from disciplines including history, physics, biomolecular science, language classes, business, chemistry, economics, archaeology, and so on. Some show add-on, co-curricular programs (such as two-week summer experiences or mandatory, ungraded seminars), and others show activities embedded in the curriculum (such as physics concept videos in a physics course or the clinical shadowing of medical providers). For any educator looking for ideas, the vignettes alone are worth a look.

The largest question is how to thread the dimensions across an entire curriculum. Chapter 4 offers multiple paths to “connected program design”, each featuring repeated check-ins on student learning and opportunities for feedback to students. For instance, the curriculum could be arranged around a real-world event (climate change) or it could feature a series of mandatory modules or a single linear module from start to finish (with multiple checkpoints for student knowledge acquisition.) The most interesting idea was a curated, summative portfolio (the “Showcase Portfolio”) which the students could shape and edit throughout the length of the program.

The Showcase Portfolio would be terrific evidence of an informed citizen who is able to understand knowledge generation and engage productively with uncertainty. It would also be a great thing to take to a job interview.

Jake Ashcraft

Jake Ashcraft is an STC member and a chemistry professor at South Seattle College. He has worked for more than 15 years as a writer, manager, and educator in the scientific sector, focusing on scientific communication. Jake has an MS in Technical Communication from the University of Washington.

Experience Professional Growth with STC Education!

STC offers a wide variety of online education options throughout the year. Whether you need an introduction to a subject, an in-depth review, or just a brush-up, STC has what you need. Advance your career with STC's varied collection of online education.

Live Weekly Webinars

Multi-Week Online Courses

Recorded Webinars

Free On-Demand Seminars
(Members Only)



Visit stc.org/education

REGISTRATION IS OPEN

Visit summit.stc.org

5-8 May 2019
Denver, CO



TECHNICAL COMMUNICATION

2019

SUMMIT

CONFERENCE & EXPO

Lyn Gattis, Editor

The following articles on technical communication have appeared recently in other journals. The abstracts are prepared by volunteer journal monitors. If you would like to contribute, contact Lyn Gattis at LynGattis@MissouriState.edu.

"Recent & Relevant" does not supply copies of cited articles. However, most publishers supply reprints, tear sheets, or copies at nominal cost. Lists of publishers' addresses, covering nearly all the articles we have cited, appear in *Ulrich's international periodicals directory*.

Communication

Communicating public avalanche warnings—what works?

Engeset, R., Pfuhl, G., Landrø, M., Mannberg, A., & Hetland, A. (2018). *Natural Hazards and Earth System Sciences*, 18, 2537–2559. doi: 10.5194/nhess-18-2537-2018

"Like many other mountainous countries, Norway has experienced a rapid increase in both recreational winter activities and fatalities in avalanche terrain during the past few decades: during the decade 2008–2017, 64 recreational avalanche fatalities were recorded in Norway. This is a 106% increase from that of the previous decade. In 2013, Norway therefore launched the National Avalanche Warning Service (NAWS), which provides avalanche warnings to transport and preparedness authorities and to the public. . . . Avalanche warnings communicate complex natural phenomena with a variable complexity and level of uncertainty about both the future and the present. In order to manage avalanche risk successfully, it is fundamental that the warning message can be understood and translated into practice by a wide range of different user groups. . . . To evaluate how different modes of communication are understood, and how efficiently the informational content is communicated, [the authors] designed and implemented a web-based user survey. . . . [The] empirical analyses suggest that most users find the warning service to be

useful and well suited to their needs. However, the effectiveness of a warning seems to be influenced by the competency of the user and the complexity of the scenarios. [The authors] discuss the findings and make recommendations on how to improve communication of avalanche warnings."

Yvonne Wade Sanchez

Scientists' views about communication objectives

Besley, J. C., Dudo, A., & Yuan, S. (2018). *Public Understanding of Science*, 27(6), 708–730. doi: 10.1177/0963662517728478

"This study looks at how United States–based academic scientists from five professional scientific societies think about eight different communication objectives. The degree to which scientists say they would prioritize these objectives in the context of face-to-face public engagement is statistically predicted using the scientists' attitudes, normative beliefs, and efficacy beliefs, as well as demographics and past communication activity, training, and past thinking about the objectives. The data allow for questions about the degree to which such variables consistently predict views about objectives. The research is placed in the context of assessing factors that communication trainers might seek to reshape if they wanted get scientists to consider choosing specific communication objectives."

Yvonne Wade Sanchez

Understanding the public, the visitors, and the participants in science communication activities

Kato-Nitta, N., Maeda, T., Iwahashi, K., & Tachikawa, M. (2017). *Public Understanding of Science*, 27(7), 857–875. doi: 10.1177/0963662517723258

“Despite the promotion of public engagement in science, there has been little empirical research on the sociocultural and attitudinal characteristics of participants in science communication activities and the extent to which such individuals are representative of the general population. [The authors] statistically investigated the distinctiveness of visitors to a scientific research institution by contrasting samples from visitor surveys and nationally representative surveys. The visitors had more cultural capital (science and technology/art and literature) and believed more in the value of science than the general public, but there was no difference regarding assessment of the levels of national science or of the national economy. A deeper examination of the variations in the visitors’ exhibit-viewing behaviors revealed that individuals with more scientific and technical cultural capital viewed more exhibits and stayed longer at the events. This trend in exhibit-viewing behaviors remained consistent among the different questionnaire items and smart-card records.”

Yvonne Wade Sanchez

Design

Promoting inclusive and accessible design in usability testing: A teaching case with users who are deaf

Hutter, L., & Lawrence, H. M. (2018). *Communication Design Quarterly Review*, 6(2), 21–30. doi: 10.1145/3282665.3282668

“Drawing on an analysis of a usability teaching case with users who are deaf and who communicate using American Sign Language, [the authors] argue that there is a need for industry and the academy to refocus on more accessible testing practices, situated more decidedly within the social, cultural, and historical contexts of users. [The authors] offer guidelines for more inclusive practices for testing with users who are

deaf prompting designers, developers, and students to think about systems of behavior, such as audism, cultural appropriation, and technological paternalism that undermine accessibility in their design and practices. More broadly, [the authors] propose ways in which instructors of technical communication can leverage usability tools and research methods to help students better understand their users for any artifact they design and create.”

Lyn Gattis

Up and down or side by side: Structuring comparisons in data tables

Lang, T. (2018). *AMWA Journal*, 33(3), 104–110. [doi: none]

This review of studies on table design and readability was conducted in the context of medical writing but is relevant to other types of data reporting. The author finds that “[w]e are physiologically more inclined to scan (and thus to compare) horizontally than vertically. In vertical comparisons, all numbers in each cell can easily be compared up and down rows, without visual interruption. In horizontal comparisons, numbers being compared are farther apart and can be separated by other elements in the cells. However, research and expert opinion differ on the preferred arrangement, indicating that the difference is likely not important. Of 109 books reviewed, 21 specifically recommended vertical comparisons, 11 used examples involving vertical comparisons, and 8 had examples of both arrangements or considered each arrangement appropriate. Only 13 specifically recommended horizontal comparisons, and 56 did not address the issue. The difference between arrangements does not appear to affect the utility of a table, although readers may intuitively prefer side-by-side comparisons. Fitting a table to the dimensions of a page is often more important than arranging the direction of the comparisons.”

Lyn Gattis

Education

Beyond grammar: Tracking perceptions of quality in student e-mail

Blackburne, B. D., & Nardone, C. F. (2018). *Journal of Technical Writing and Communication*, 48(4), 412–440. doi: 10.1177/0047281617730532

“This research explores a presumed link between today’s use of digital media and an ever-increasing lack of rhetorical awareness in students. Specifically, the study pilots a method for measuring rhetorical awareness through students’ e-mail transactions with faculty in technical writing service courses, questioning whether rhetorical awareness has decreased in the preceding 10 years. The findings indicate that students might be more rhetorically aware today than they were 10 years ago, but levels remain below expectations.”

Anita Ford

Student perceptions of a revise and resubmit policy for writing assignments

Garner, B., & Shank, N. (2018). *Business and Professional Communication Quarterly*, 81(3), 351–367. doi: 10.1177/2329490618784962

“Effective writing is a soft skill that is highly in demand in today’s workforce. This qualitative study examines student perceptions of a revise and resubmit policy aimed at increasing student engagement with an instructor’s writing feedback and ultimately improving students’ writing skills. Students across three business communication courses were offered bonus points if they made revisions and documented those revisions. The findings suggest that students were willing to complete a revision even if given only a small grade incentive. While some expressed negativity toward the extensive feedback, others viewed the revision option as a rare but valuable opportunity.”

Diana Fox Bentele

Ethics

Legal and ethical implications of website accessibility

Palmer, Z. B., & Palmer, R. H. (2018). *Business and Professional Communication Quarterly*, 81(4), 399–420. doi: 10.1177/2329490618802418

This article is intended for writing instructors, but the legal cases it cites make it interesting for practitioners as well. “This article argues that business and professional communication practitioners, instructors, and students, besides becoming better informed about the legal context of website accessibility, should also become more aware of the ethical considerations of creating digital communication products that are inherently accessible for people with disabilities. Through a detailed review of the most important legal cases in the United States and discussion of ethical considerations concerning website accessibility for the disabled, [the authors] provide possible entrance points that will help instructors bring ethical considerations into the discussion of website accessibility. [The authors] urge instructors to regularly include disability in discussions of accessibility cases.”

Diana Fox Bentele

Metaphor use in Chinese and American CSR reports

Sun, Y., Jin, G., Yang, Y., & Zhao, J. (2018). *IEEE Transactions on Professional Communication*, 61(3), 295–310. doi: 10.1109/TPC.2018.2826759

“Corporate social responsibility (CSR) reports help develop concerned stakeholders’ perceptions of corporate image. This study investigates metaphor use as a discursive and cognitive strategy for developing corporate images in Chinese and American CSR reports using corpus-based conceptual metaphor analysis. Both countries’ CSR reports share most metaphor pairings that contribute to building corporate images of being economically competitive, ethically cooperative, and environmentally responsible. Although both stress self-development and taking a leading position, American companies pay more attention to external cooperation with others. Chinese companies stress internal cooperation and a well-organized hierarchy.”

Lyn Gattis

Participatory video methods in US: Sharing power with users to gain insights into everyday life

Rose, E., & Cardinal, A. (2018). *Communication Design Quarterly Review*, 6(2), 9–20. doi: 10.1145/3282665.3282667

“As technologies proliferate into all aspects of daily life, UX practitioners have the ability and responsibility to engage in research to help organizations better understand people’s needs. [The authors] argue that UX practitioners have an ethical commitment to deploy methods that consciously shift power to create a more equitable relationship between researcher and participants. This article offers participatory video as a method for UX practitioners that democratizes the design process and creates rich visual data. [The authors] detail two cases of participatory video methods and how they were used to explore the potential of participatory methods in UX.”

Lyn Gattis

Health communication

Connect with your patients, not the screen: Usability claims in electronic health records

Walkup, K. L. (2018). *Communication Design Quarterly Review*, 6(2), 31–40. doi: 10.1145/3282665.3282669

“This article examined the usability claims that Electronic Health Records (EHRs) make to healthcare providers. Usability claims appear as statements that persuade users to adopt the interface based on usability or user experience. These claims may show what healthcare providers are presumed to require from online health technologies. Usability claims in this study included intuitive interfaces, adaptability of documentation and records, and supplementing patient communication. Analyzing usability claims then becomes a way of understanding healthcare providers, their patients, and the technologies both use for health communication.”

Lyn Gattis

Information management

An investigation of maintenance technicians’ information-seeking behavior in a repair center

Lundin, J., & Eriksson, Y. (2018). *IEEE Transactions on Professional Communication*, 61(3), 257–274. doi: 10.1109/TPC.2018.2826087

“We lack a good understanding of maintenance technicians’ information-seeking behavior. For instance, little is known about what kinds of information needs that technicians exhibit and what types of sources they employ. Understanding such information-seeking behavior is essential to design useful information. Workplace observations reveal that technicians exhibited 50 different types of information needs. They seldom sought instructions covering an entire work task. Instead, to satisfy their information needs, they consulted four types of sources.” These sources included colleagues or customers, binders of information, digital databases, and readings or observations of machine operations.

Lyn Gattis

Learning to file: Reconfiguring information and information work in the early twentieth century

Robertson, C. (2017). *Technology and Culture*, 58(4), 955–981. doi: 10.1353/tech.2017.0110

“This article uses textbooks and advertisements to explore the formal and informal ways in which people were introduced to vertical filing in the early twentieth century. Through the privileging of ‘system’ an ideal mode of paperwork emerged in which a clerk could ‘grasp’ information simply by hand without having to understand or comprehend its content. A file clerk’s hands and fingers became central to the representation and teaching of filing. In this way, filing offered an example of a distinctly modern form of information work. Filing textbooks sought to enhance dexterity as the rapid handling of paper came to represent information as something that existed in discrete units, in bits that could be easily extracted. Advertisements represented this mode of information work in its ideal form when they frequently erased the worker or reduced him or her to hands, as ‘instant’ filing became ‘automatic’ filing, with the filing cabinet presented as a machine.”

Lyn Gattis

Intercultural issues

One word of heart is worth three of talent: Professional communication strategies in a Vietnamese nonprofit organization

Hopton, S. B., & Walton, R. (2018). *Technical Communication Quarterly*, 27(4). doi: 10.1080/10572252.2018.1530033

“This article reports findings from a month-long research project in Vietnam working with the Vietnam Association for Victims of Agent Orange (VAVA). The authors found that VAVA did not always abide [by] Western prescriptions for ‘good’ technical and scientific communication yet were extremely effective technical communicators among victims and families. This article reports findings that call for an expanded definition of what it means to practice good technical communication, especially in understudied cultural contexts.”

Rhonda Stanton

Language

A multidimensional analysis of research article discussion sections in the field of chemical engineering

Jin, B. (2018). *IEEE Transactions on Professional Communication*, 61(3), 242–256. doi: 10.1109/TPC.2018.2817002

“This study investigates linguistic characterizations in the form of linguistic co-occurrence patterns in discussion sections of English research articles (RAs) in chemical engineering, and linguistic variations that distinguish discussion sections of high-impact articles from those in low-impact articles. Six linguistic co-occurrence patterns were identified in RA discussion sections. The results examine the linguistic characterizations in the RA discussion sections and interesting differences in the high- and low-impact discussion sections.”

Lyn Gattis

Resolving discourse at technical-support helpdesks

Robles, V. D. (2018). *IEEE Transactions on Professional Communication*, 61(3), 275–294. doi: 10.1109/TPC.2018.2813178

“This study examined discourse during problem resolution in face-to-face technical-support interactions between technical-support providers and users. Using speech-act discourse analysis, this study examined 17 helpdesk interactions that resolved problems. Statistically significant results about both speakers’ discourse indicate that typical instructional strategies (such as explanations) do not necessarily characterize more satisfactory interactions. Instead, providing minimal responses or giving background information from personal experience contribute toward satisfactory outcomes. Also, users’ facility in asking follow-up questions or giving further background information promotes satisfaction.”

Lyn Gattis

Management

Visualizing certainty: What the cultural history of the Gantt chart teaches technical and professional communicators about management

Robles, V. D. (2018). *Technical Communication Quarterly*, 27(4), 300-321. doi: 10.1080/10572252.2018.1520025

“Using a cultural-historical genre analysis of the Gantt chart, the author describes how, when a project’s progress and scope are being considered, this popular project management visualization evokes managerial values of certainty and simplicity. These values, instantiated in early 20th-century scientific management philosophy, are made visually manifest in Henry L. Gantt’s popular chart. These charts require technical and professional communicators to gauge the rhetorical implications of using them when providing their expertise in communicating project management.”

Rhonda Stanton

Professional issues

The “reasonably bright girls”: Accessing agency in the technical communication workplace through interactional power

Petersen, E. J. (2018). *Technical Communication Quarterly*, 27(4). doi: 10.1080/10572252.2018.1540724

“Women continue to face difficulties in the technical and professional communication (TPC) workplace for a myriad of reasons. However, they are not powerless, and interviews with 39 female practitioners of TPC reveal that they use interactional power to maneuver within and around the system of the traditional workplace to solve problems of devaluation, exclusion, harassment, and siloing. A key aspect of being able to navigate power through interaction is becoming aware of the context in which power struggles take place and then using that knowledge to design new participation. Women who

claim agency in the workplace understand that power is not possessed, but that they can access resources to participate in power shifts and dynamics.”

Rhonda Stanton

Research

Contextual dropping, collateral data: Screenshot methods for UX research

Reimer, C. (2018). *Communication Design Quarterly Review*, 6(2), 83–92. doi: 10.1145/3282665.3282673

“This article presents a novel method for data collection. It relies on a larger case study of the game League of Legends to forward the concepts of contextual cropping and collateral data. Contextual cropping gives researchers recommendations for gathering data with screenshots while respecting the in situ ecology of that data. Contextual cropping complements screenshot data with contextual metadata and offers potential collateral data with which to further texture research.”

Lyn Gattis

Feminist digital research methodology for rhetoricians of health and medicine

De Hertogh, L. B. (2018). *Journal of Business and Technical Communication*, 32(4), 480–503. doi: 10.1177/1050651918780188

“This article argues that rhetoricians of health and medicine can benefit from new methodological orientations that more fully account for conducting digital research within vulnerable online communities. More specifically, this article introduces a feminist digital research methodology, an intersectional methodology that helps rhetoricians of health and medicine contend with the overlapping rhetorical, technological, and ethical frameworks affecting how we understand and collect health information, particularly within vulnerable online communities. The author considers methodological shifts in Internet research ethics, rhetorics of health and medicine, and feminist rhetorics as well as definitions and conceptions of online communities and vulnerability. The author

next draws from a 5-year case study of an online childbirth community to demonstrate how a feminist digital research methodology offers an alternative methodological orientation that helps researchers navigate ethical decision-making practices that arise from conducting health research within vulnerable online communities. Finally, the author outlines the broader implications of this methodology by suggesting three ways that scholars can use it within and beyond the field.”

Sean C. Herring

Understanding “understanding” in Public Understanding of Science

Huxster, J. K., Slater, M. H., Leddington, J., LoPiccolo, V., Bergman, J., Jones, M., McGlynn, C., Diaz, N., Aspinall, N., Bresticker, J., & Hopkins, M. (2017). *Public Understanding of Science*, 27(7), 756–771. doi: 10.1177/0963662517735429

“This study examines the conflation of terms such as ‘knowledge’ and ‘understanding’ in peer-reviewed literature, and tests the hypothesis that little current research clearly distinguishes between importantly distinct epistemic states. Two sets of data are presented from papers published in the journal *Public Understanding of Science*. In the first set, the digital text analysis tool, Voyant, is used to analyze all papers published in 2014 for the use of epistemic success terms. In the second set of data, all papers published in *Public Understanding of Science* from 2010–2015 are systematically analyzed to identify instances in which epistemic states are empirically measured. The results indicate that epistemic success terms are inconsistently defined, and that measurement of understanding, in particular, is rarely achieved in public understanding of science studies. [The authors] suggest that more diligent attention to measuring understanding, as opposed to mere knowledge, will increase efficacy of scientific outreach and communication efforts.”

Yvonne Wade Sanchez

Technology

Introducing videoconferencing on tablet computers in nurse–patient communication: Technical and training challenges

Rygg, L. O., Brataas, H. V., & Nordtug, B. (2018). *International Journal of Telemedicine and Applications*, Article ID 8943960. doi: 10.1155/2018/8943960

“This article examines personnel and patient experiences of videoconferencing (VC) trials on tablet computers between oncology certified nurses (OCNs) and patients with cancer who live at home. The study points to organizational pitfalls during the introduction process. In many different arenas, the use of VC has increased recently owing to improved Internet access and capacity. This creates new opportunities for contact between patients living at home and their nurses. Video conferencing presupposes knowledge about Internet access, training, and usability of technological equipment. The aim of this pilot study was to illuminate patients’ and nurses’ experiences of the technical functionality, usability, and training of tablet use in VC in primary cancer care. . . . The analysis revealed two main categories: network connectivity and tablet usability and training and educational pitfalls. When planning VC implementation, the organizational leadership should consider network access and stability, as well as individualized VC training on tablets. Ensuring patient safety should also be a priority. Further research should provide knowledge of technological and educational pitfalls, and possible implications of VC on the care quality of nursing.”

Yvonne Wade Sanchez

Theory

The recalcitrant invention of X-ray images

Gibbons, M. (2018). *Technical Communication Quarterly*, 27(4). doi: 10.1080/10572252.2018.1539193

“This article extends new materialist theorizing on the constructive role played by the physical stuff of the world. Specifically, it draws on Kenneth Burke’s writings on recalcitrance to theorize the materialities of rhetorical invention. It takes X-rays as a case study in recalcitrance-driven invention, focusing on two particular applications, traditional medical X-rays, a pervasive category of contemporary technical communication, and backscatter X-ray airport security scans, a controversial and short-lived one. Its analysis shows how recalcitrance (1) is harnessed as means of technical invention and (2) is key to invention’s bidirectionality, by which our material interventions, in turn, work upon us.”

Rhonda Stanton

Usability

Applying usability and user experience within academic contexts: Why progress remains slow

Sauer, G. (2018). *Technical Communication Quarterly*, 27(4), 362-371. doi: 10.1080/10572252.2018.1521637

“In his 2013 article ‘Slow Ideas,’ Harvard professor and MacArthur fellow Atul Gawande discusses two forms of disciplinary change. He describes two surgical innovations from the mid-19th century, and traces why one (anesthesia) was easily and rapidly adopted, whereas the other (antiseptic) was accepted only slowly, over the course of decades. This happened because the more significant innovation (antiseptic) required a fundamental redefinition of the profession of surgery, including a significant rethinking of the field’s methods and values. Instead of ‘warriors against disease,’ surgeons needed to become scrupulously sterile practitioners of cleanliness—and many, advanced in their careers, resisted such a change. This article

contends that usability and user experience represent a similarly slow change in the field of technical communication, and that we are still in the midst of transformations within our discipline which may require similar redefinition of scholarly work within this field.”

Rhonda Stanton

How to be open: User experience and technical communication in an emerging game development methodology

Thominet, L. (2018). *Communication Design Quarterly Review*, 6(2), 70–82. doi: 10.1145/3282665.3282672

“This study builds a model of open video game development, an emerging user-centered design practice where a developer publicly releases an incomplete game and iterates on it while gathering feedback from the player community. It argues that open development is fundamentally a communication and user experience practice characterized by a commitment to access, transparency, and feedback. Ultimately, it shows open development as a practice where game developers are consciously designing a compelling experience of participation in user research.”

Yvonne Wade Sanchez

Improving onboarding with employee experience journal mapping: A fresh take on a traditional UX technique

McKelvey, H. & Frank, J. L. (2018). *Weave*, 1(9). doi: 10.3998/weave.12535642.0001.903

An important part of project management is inculcating new team members. This project brought user experience (UX) aspects into these internal issues. The authors “present a creative method for applying the UX technique of journey mapping to improve the onboarding experience of new employees in any organization. Journey mapping is a well-known design research tool used to gain insight into how a user experiences a service, process, or product, with the goal of making informed improvements to deliver a better experience for future users. [The authors] argue that journey mapping can also be used to improve the

internal process of onboarding new employees and improve the experience for future new hires, which is important because positive onboarding experiences are linked to increased productivity and greater employee retention. . . .” The authors share methods as well as “findings, recommendations, and lessons learned.” Their toolkit, complete with templates, is available at <https://jacquelinelfrank.wordpress.com/my-work/exjm-toolkit/>.

Diana Fox Bentele

Live-action communication design: A technical how-to video case study

Eriksson, P. E., & Eriksson, Y. (2018). *Technical Communication Quarterly*, 27(4). doi: 10.1080/10572252.2018.1528388

“This case study is based on a research through design project (RTD) that focuses on a technical communication video of the live-action format. It investigates the usability and design-implications of a live-action how-to video, by means of analyzing user-centered data such as YouTube analytics data, usability, and comprehension assessments. In the study, four key live-action video affordances are identified: verifiability, comparability, recordability, and visibility. The identification of these affordances when related to the users’ assessments resulted in several design implementations that would warrant sought-for communication efficacies. Findings show that some assumed efficacies appear to be mitigated by the complexity and the density of the video information. One implication of this is that the implementation of conventional video editing techniques and the addition of on-screen text that serve to make content briefer and more concise into instructional live-action videos require the technical communicator’s careful consideration.”

Rhonda Stanton